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March 27, 2009 TO-004-06-07-0011-DCN357

Ken Marcy, Site Assessment Manager
United States Environmental Protection Agency
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Reference: Contract No. EP-S7-06-03
Technical Directive Document No. 06-07-0011
Larson AFB Titan Missile Facility S-2 Area Groundwater
Site Inspection Report, Final

Dear Mr. Marcy:

Enclosed please find the Site Inspection (SI) Report, Final, for the Larson AFB Titan Missile Facility S-2 Area Groundwater in Warden, Grant County, Washington. If you have any questions or comments, please contact Alexis Ande, the TL Site Assessment Group Leader and Project Manager, at (360) 443-6575 or myself at (360) 871-8769.

Sincerely,

Franki J. Jewell
START-3 Program Manager
TechLaw, Inc.

Enclosure

cc: Sharon Nickels, EPA Project Officer
Alexis K. Ande, START-3 Site Assessment Group Leader and Project Manager, TechLaw, Inc.
Ashley Vernon, START-3 Files Administrator, TechLaw, Inc.

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Site Inspection Report
Larson AFB Titan Missile Facility S-2 Area Groundwater
Warden, Grant County, Washington
TDD: 06-07-0011

TechLaw, Inc.
Contract No. EP-S7-06-03

Region 10

START-3

Superfund Technical Assessment and Response Team

Submitted To: Ken Marcy, Task Monitor
United States Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

March 2009

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LIST OF ACRONYMS

Acronym	Definition
%R	Percent recovery
AFB	Air Force Base
amsl	above mean sea level
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfs	cubic feet per second
CLP	Contract Laboratory Program
CLPAS	Contract Laboratory Program Analytical Services
DERP-FUDS	Defense Environmental Restoration Program - Formerly Used Defense Site
DoD	Department of Defense
DQO	data quality objectives
Ecology	Washington Department of Ecology
EDB	Ethylene Dibromide
EPA	United States Environmental Protection Agency
GPS	Global Positioning System
ICBM	Intercontinental Ballistic Missile
IDW	investigation-derived waste
INPR	Inventory Project Report
LOX	liquid oxygen
MCL	Maximum Contaminant Level
MEL	Manchester Environmental Laboratory
mg/Kg	milligrams per kilogram
MS/MSD	Matrix spike/duplicates
NDMA	N-nitrosodimethylamine
NRAP	no remedial action is planned
OFS	Overland Flow Segments
PA	Preliminary Assessment
PCB	polychlorinated biphenyls
PPE	probable point of entry
PRG	Preliminary Remediation Goals
QA	quality assurance
QC	quality control
RP-1	rocket propellant number 1, kerosene
RPD	relative percent difference
SARA	Superfund Amendments and Reauthorization Act
SI	Site Inspection
SOP	Standard Operating Procedures
SSSP	Sampling and Quality Assurance Plan
START	Superfund Technical Assessment and Response Team
SVOC	semivolatile organic compounds
TAL	Target Analyte List
TCE	Trichloroethylene
TCL	Target Compound List
TDD	Technical Direction Document
TDL	target distance limit
Titan S-2	Titan missile facility S-2
TL	TechLaw, Inc.
TPH	total petroleum hydrocarbons
UDMH	unsymmetrical dimethylhydrazine
µg/L	micrograms per liter
U.S.	United States
USAF	United States Air Force
USACE	United States Army Corps of Engineers
VOC	volatile organic compounds

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has tasked the TechLaw, Inc. (TL) Superfund Technical Assessment and Response Team-3 (START-3) to conduct a site inspection (SI) for the groundwater surrounding the Larson Air Force Base (AFB) Titan Missile Facility S-2 (Titan S-2) with the site name Larson AFB Titan Missile Facility S-2 Area Groundwater (S-2 Area Groundwater), under Contract No. EP-S7-06-03, Technical Direction Document (TDD) No. 06-07-0011. The general purpose of an SI is to collect information on current site conditions including the nature and extent of contamination, determine potential human and ecological exposure pathways, and determine the need for federal intervention under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 and the Superfund Amendments and Reauthorization Act (SARA) of 1986.

Based on this information, START-3 was tasked by the EPA Task Monitor to:

- Review background site information;
- Develop a Site Specific Sampling Plan (SSSP) to characterize the sediment and groundwater near Titan S-2;
- Develop a comprehensive list of potential contaminants present at missile sites;
- Arrange for commercial laboratory analysis of n-nitrosodimethlyamine (NDMA) and unsymmetrical dimethylhydrazine (UDMH) sediment samples and UDMH water samples and EPA Contract Laboratory Program (CLP) or Manchester Environmental Laboratory (MEL) analysis of volatile organic compounds (VOC), semivolatile organic compounds (SVOC), pesticides and polychlorinated biphenyls (PCB), Target Analyte List (TAL) metals, total petroleum hydrocarbons (TPH)- diesel (d) and –gasoline (g) ranges, and perchlorate sediment and water samples; arrange for MEL analysis of NDMA water samples;
- Document a threat or potential threat to public health or the environment posed by the Site;
- Assess the need for additional detailed investigation and/or response action at the Site;
- Document current site conditions; and
- Prepare a SI report documenting the results.

This document includes the site background information (Section 2), field sampling activities and analytical protocols (Section 3), quality assurance and quality control criteria (Section 4), background sample results (Section 5), potential sources (Section 6), migration pathways and targets (Section 7), summary and conclusions (Section 8), and references (Section 9).

2.0 SITE BACKGROUND

The following subsections discuss the site background, description, ownership history, and operations. Information presented in this subsection is based on a review of the site background information using EPA Region 10 and Washington Department of Ecology (Ecology) files.

2.1 Project Location

Site Name:	Larson AFB Titan Missile Facility S-2 Area Groundwater
CERCLIS* No.	WAN001002314
Location:	Warden, Washington 98857
County:	Grant
Latitude:	46° 56' 41.31"North
Longitude:	119° 2' 14.52" West
Legal Description:	Section 33, Township 17 North, Range 30 East (Assessor 2007)
Site Owner:	Titan Storage, Inc. 221 South Elm Street Warden, Washington 98857
Site Contact:	Robert Echols

* Comprehensive Environmental Response, Compensation, and Liability Information System

2.2 Site Description and Current Use

The Larson Air Force Base Titan S-2 Area Groundwater (Titan S-2) site comprises the groundwater of the area surrounding the former Titan S-2 Missile facility. The Titan S-2 facility is a former missile launch site located approximately 3 miles south of Warden, in Grant County, Washington (Figure 2-1). The Titan S-2 facility occupies approximately 46.71 acres and includes a subterranean launch facility (1,000 feet by 1,500 feet), with three missile launch complexes, each containing three vertical missile silos, propellant and equipment terminals, two radar antennae silos, air intake and exhaust structures, a control center, powerhouse (130 foot diameter), access portals, and an interconnecting steel tunnel system (Ecology 2000). Other above ground structures include a gate house, sewage stabilization pond, spray pond, and security fencing (USACE 1992). Post-Department of Defense (DoD) structures currently located on site include an office trailer and a methanol plant building (USACE 1988) (Figure 2-2).

According to United States Army Corps of Engineers (USACE) documents, the blast doors that top the launch silos are welded open and a makeshift cover of scrap iron secures each silo. During the site visit, the entry portal was open and surrounded by up-ended counterweights for the blast doors which discouraged casual entry to the portal. Many of the smaller shafts were open and presented a safety hazard (USACE 1988). Debris has reportedly been dumped into the open shafts (USACE 1991).

The Titan S-2 facility is located at an elevation of approximately 1,312 feet above mean sea level (amsl) (USGS 1980). The surrounding land use includes irrigated farmland and arid sagebrush country (USACE 1986).

2.2.1 Site Operations and Waste Characteristics

The Titan S-2 facility was formerly used by the United States Air Force (USAF) between 1962 and 1964 as a Titan Intercontinental Ballistic Missile (ICBM) launch site (Ecology 2000).

During Department of Defense (DoD) activities at the Titan S-2 facility, above ground structures consisted of a gatehouse, entry portal, air intake and exhaust structures, sewage stabilization pond, spray pond, and security fencing (Ecology 2000). Subterranean structures included a "hard" launch facility, with three missile launch complexes, each consisting of three vertical missile silos, propellant, equipment terminals, two radar antennae silos, and air intake and exhaust structures. A control center, powerhouse, access portal; and an interconnecting steel tunnel system were also located under ground (Ecology 2000). Two deep wells, 981 and 1,000 feet below ground surface (bgs), respectively, served the facility; the well casings are reportedly exposed and the wells uncapped. Two 30,000-gallon underground storage tanks stored water for use at the facility (Ecology 2000).

Typically, various hazardous, flammable, and explosive materials were used, stored, and disposed of onsite during the period of operation at the facility (Ecology 2000). These included diesel oil, kerosene (RP-1), lubrication oil, hydraulic fluid, solvents, degreasers, transformer fluids (suspected to contain polychlorinated biphenyls [PCBs]), nickel-cadmium batteries, liquid oxygen (LOX), nitrogen, and helium (Ecology 2000). Furthermore, solvents and degreasers were stored, used, and disposed of at the facility; analyses of contaminants at similar properties have revealed trichloroethylene (TCE), perchloroethylene, and toluene, commonly used as solvents and degreasers. In most cases, these substances were held in tanks housed inside the facility or buried adjacent to the facility.

In 1966, the USAF declared the Titan S-2 facility as excess, and salvage operations were carried out under the USAF by private contractors (Ecology 2000). In 1966, the deed was transferred to Underground Storage, Inc., and from 1966 to 1969, Underground Storage, Inc. attempted to retrofit the antenna and exhaust silos and other areas of the complex to create storage tanks for liquid propane gas (Ecology 2000). Retrofitting efforts proved unsuccessful when leaks of liquid propane gas filled areas of the facility undergoing salvage, and in 1969, an explosion triggered by welding operations killed several workers at the facility and blew both 106-ton blast doors off of the Launcher 2 launch silo (USACE 1986).

In 1970, the property was purchased by Lennington and Ash, under the partnership Titan Storage, Inc. (USACE 1992). In 1976, Titan Storage, Inc. sold two acres of the property to a group involved in methanol production. A methanol fuel plant was constructed on they property but was soon abandoned for economic reasons. The methanol fuel plant is now vacant and unused (USACE 1992).

The owner of the Titan Storage, Inc. is currently listed as Mr. Robert Echols.

2.3 Previous Investigations

The following subsections discuss previous site investigations for the former Titan S-2 facility, potential sources, and the migration/exposure pathways and targets.

2.3.1 1986 USACE Inspection

On May 29, 1986, R.S. Anderson of Land Use Planning and the USACE conducted an inspection of the Titan S-2 facility. During the site visit, the inspectors conducted an interview with the property owners, completed a visual inspection of the above ground features of the Titan S-2 facility, and reviewed existing agency documents relating to the Titan S-2 facility (Ecology 2000). During the on-site visit there was no verbal or visual indication of hazardous materials contamination or the presence of underground storage tanks (Ecology 2000). Property owners informed USACE that former fuel oil tanks were not salvaged and that two deep wells existed in the powerhouse structure (Ecology 2000). Post-DoD alterations to the design of the Titan S-2 facility for use as liquid propane gas storage and subsequent liquid fertilizer storage was noted (Ecology 2000). USACE documented Titan S-2 as a former DoD facility and noted that certain features were the result of prior DoD ownership and utilization (USACE 1986). USACE recommended further evaluation to determine the presence or absence of DoD originated hazardous or toxic substances (USACE 1986). No samples were collected during the 1986 USACE investigation.

2.3.2 1988 USACE Investigation PA

In February 1988, the Defense Environmental Restoration Program - Formerly Used Defense Site (DERP-FUDS) performed an Inventory Project Report. The USACE reviewed past and current property use, ownership and conditions based on documentary sources, interviews, and an on-site investigation. USACE determined that the Titan S-2 facility was a former DoD property, but indicated that since the facility currently was privately owned, it was not eligible for further DoD structural demolition or debris cleanup (USACE 1988). No samples were collected during the 1988 USACE investigation.

2.3.3 1991 USACE PA

In June, 1991, the DERP-FUDS program determined the Inventory Project Report (INPR) constituted a Preliminary Assessment (PA) of the property. The PA determined that there is a potential for hazardous waste at the site eligible for cleanup under the DERP-FUDS program.

2.3.4 2000 Ecology Initial Investigation

The Ecology Toxics Cleanup Program performed initial investigations at the Titan S-2 facility to determine the presence of potential soil and groundwater contamination resulting from past DoD practices (Ecology 2000). Ecology collected soil samples which were analyzed for volatile organics compounds (VOCs), total petroleum hydrocarbons (TPHs) (diesel and oil range), metals (lead, nickel, cadmium, and arsenic), and PCB's (Ecology 1999). Analyses of soil samples indicated that contaminants were present exceeding existing cleanup levels (Ecology 2000). Lubricating oil was found exceeding state cleanup levels (Ecology 2000).

2.3.5 2008 Ecology Site Hazard Assessment (SHA)

In 2008, a SHA of the property was completed by Ecology in conjunction with the Grant County Health District. As a result of the site visit and file review, the Grant County Health District

issued a letter with the attached SHA to the site owner which indicated a determination of No Further Action (NFA) (Ecology 2008; Grant County Health District 2008).

Figure 2-1
General Site Location Map

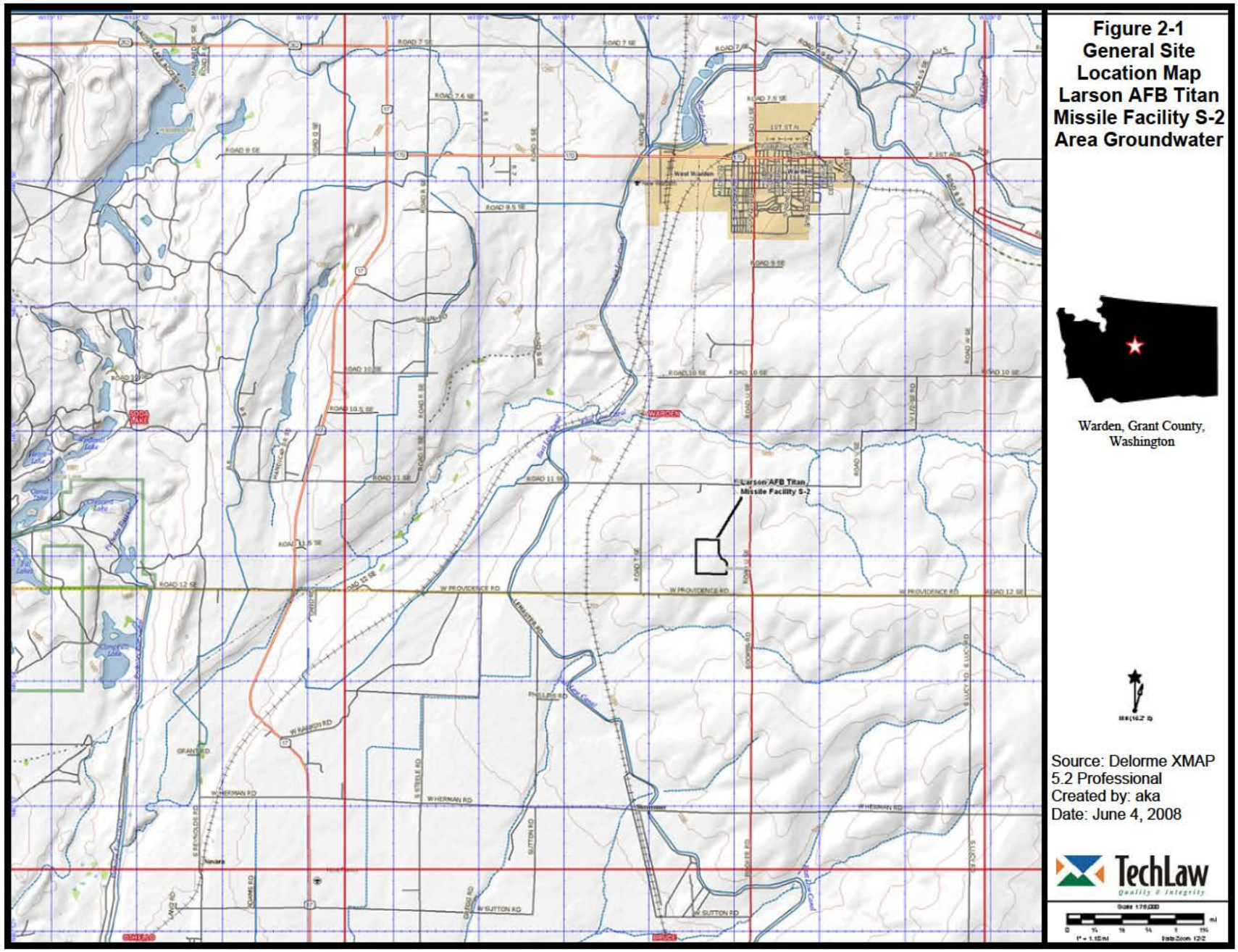

Figure 2-1
General Site Location Map
Larson AFB Titan Missile Facility S-2 Area Groundwater

Warden, Grant County, Washington

Source: Delorme XMAP 5.2 Professional
Created by: aka
Date: June 4, 2008

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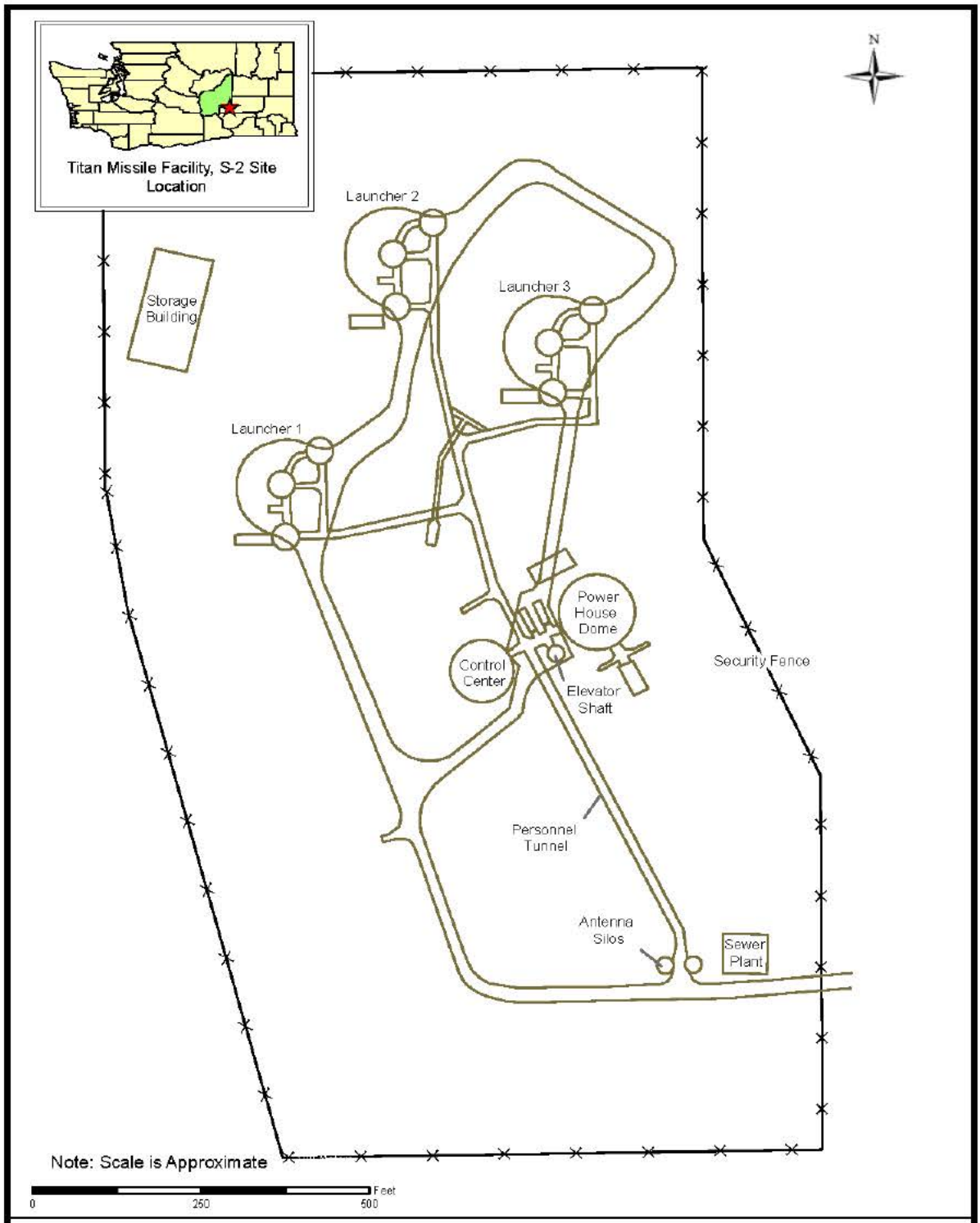
Figure 2-2
Site Layout Map



Date: 11/02/06
Created By: MKS
Project: Region 10 START-3
06-07-0012

Warden, Grant County, Washington

Figure 2-2
Site Layout Map
Larson AFB Titan Missile Facility S-2 Area Groundwater

3.0 FIELD ACTIVITIES AND ANALYTICAL PROTOCOLS

3.1 Sampling Methodology

A Site-Specific Sampling Plan (SSSP) was developed by START-3 and approved by EPA prior to field sampling (TL 2007b). The SSSP was based on a review of background information and interviews with site representatives. The SSSP describes the sampling strategy, sampling methodology, and analytical program to investigate potential targets. The SI field activities were conducted in accordance with the approved SSSP and focused on the groundwater and off-site sediments. Any deviations regarding sampling locations from the SSSP were approved by the EPA.

The START-3 SI field sampling event was conducted from October 20 through 22, 2008. All samples were analyzed for VOCs; SVOCs, including pesticides and PCBs; TPH-d; TPH-g; TAL metals; perchlorate; NDMA; and UDMH. Sample types and methods of collection are described below. A list of all samples collected for fixed laboratory analysis under the SI is contained in Table 3-1. Photographic documentation of SI field activities is presented in Appendix A.

Alphanumeric identification numbers applied by START-3 to each sample location (e.g., S2-GW-01) are used in this SI report as the station location identifiers. Sample locations are provided depicted in Figure 3-1 and described in Table 3-1.

3.1.1 Sediment Samples

No sediment samples were collected at the Titan S-2 site as no clear pathway for overland flow of surface water migration could be identified during the field sampling activities.

3.1.2 Groundwater Samples

Groundwater samples were collected at the Titan S-2 site in accordance with the sampling methodologies and Standard Operating Procedures (SOP) provided in the SSSP. A total of four drinking water samples were collected, including one background and one duplicate sample, to assess the potential for groundwater contamination within the study area. Drinking water samples were collected from a spigot as close to the well head as possible. Wells were purged until the temperature, pH, and specific conductivity of groundwater were stabilized. START-3 collected the drinking water samples directly from the spigot into sampling containers. Samples were preserved as required by the SOP.

3.2 Analytical Protocols

Samples collected for VOCs, SVOCs, pesticides, PCBs, and TAL Metals were analyzed by Contract Laboratory Program Analytical Services (CLPAS). Analytical methods for VOC and SVOC were completed using EPA Method SOM01.1 by KAP Technologies in The Woodlands, Texas. Analytical methods for inorganic parameters were completed using EPA Method ILM05.3 by Chemtech Consulting Group in Mountainside, New Jersey. Analysis of NDMA; perchlorate; and 1,4-dioxane was completed by the EPA MEL using Methods 521, 6860, and

modified Method 8270, respectively. Analysis of UDMH in water was completed by the Test America in Colorado. UDMH was completed utilizing a laboratory-generated method.

3.3 Global Positioning System

The Garmin Pro XR TDC-1 and Trimble were utilized by START-3 personnel to record coordinates of all sample locations. GPS coordinates are provided in Appendix B.

3.4 Investigation-Derived Waste

Investigation-derived waste (IDW) generated during the SI sampling effort consisted of solid sampling equipment (gloves) disposed of as non-hazardous waste through the City of Warden solid waste program. No IDW generated during the SI sampling effort remains on site.

Figure 3-1
Drinking Water Well and Off-Site Sampling Location Map

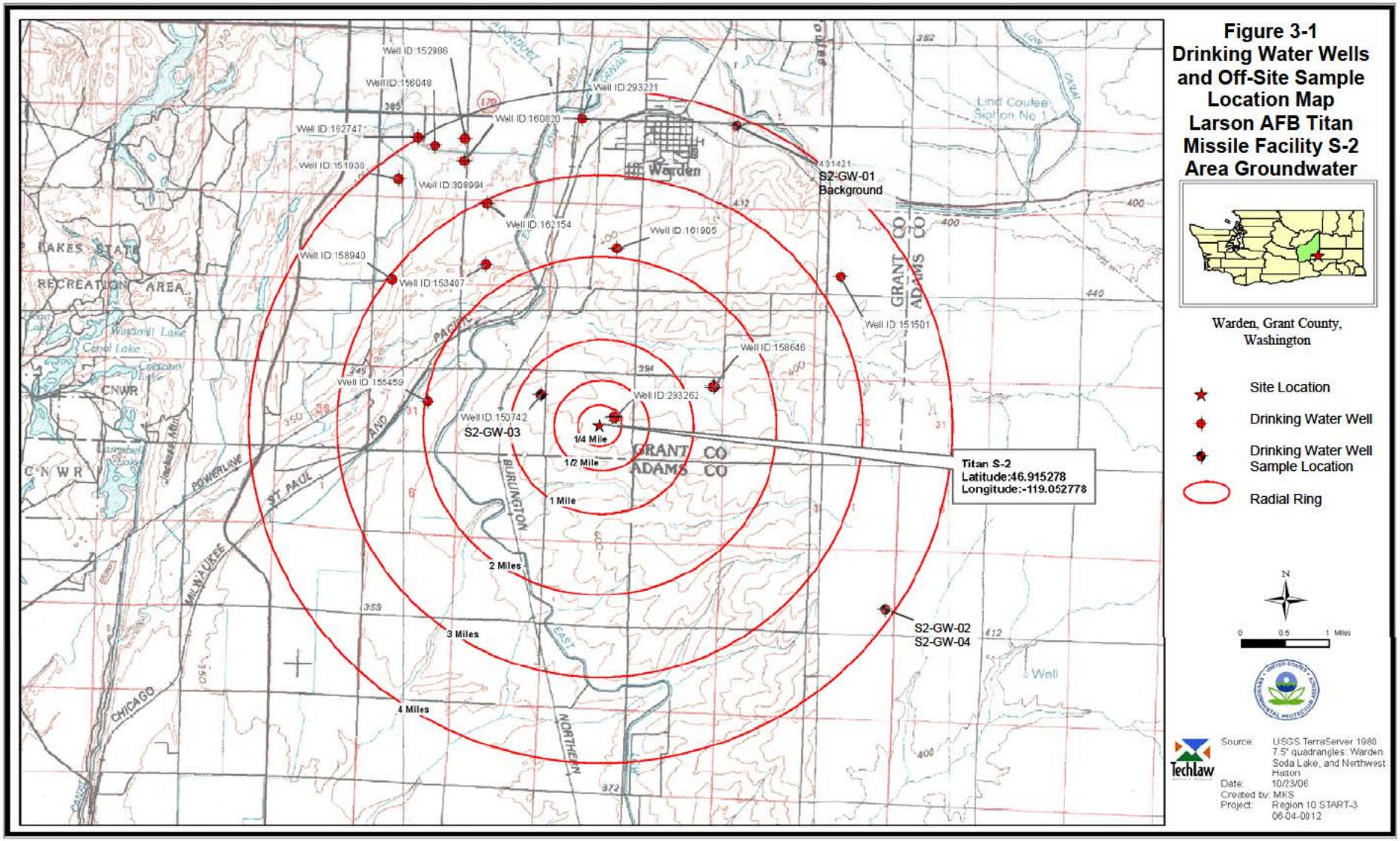


Figure 3-1
Drinking Water Wells and Off-Site Sample Location Map
Larson AFB Titan Missile Facility S-2 Area Groundwater

Warden, Grant County, Washington

Source: USGS TerraServer 1980 7.5' quadrangles: Warden, Soda Lake, and Northwest Halton
Date: 10/23/06
Created by: MKS
Project: Region 10 START-3 06-04-0012

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Table 3-1
Sample Collection Summary

Table 3-1
Sample Collection Summary
Larson AFB Titan Missile Facility S-2 Area Groundwater
Warden, Grant County, Washington

EPA ID Number	Sample Number	Inorganic Sample Number	Location Latitude / Longitude	Matrix	Sample Analysis						
					TAL	VOCs/ SVOCs/Pesticide/ PCBs	TPH-Dx, TPH-Gx	1,4-Dioxane	Perchlorate	NDMA	UDMH
08434000	S2-GW-01	MJAH96	Background well sample; NE corner of Locust Avenue and 5th Street SE; 46.9590° North / 119.02702° West	Drinking water	X	X	X	X	X	X	X
08434001	S2-GW-02	MJAH97	(b) (6) 46.88300° North / 119.05742° West	Drinking water	X	X	X	X	X	X	X
08434002	S2-GW-03	MJAH98	(b) (6) 46.92336° North / 119.06874° West	Drinking water	X	X	X	X	X	X	X
08434007	S2-GW-04	MJAHA4	(b) (6) 46.88300° North / 119.05742° West	Drinking water	X	X	X	X	X	X	

KEY:

EPA = U S Environmental Protection Agency
ID = Identification
TAL = Total Analyte List Inorganics
SVOCs = Semi-Volatile Organic Compounds
TPH-Gx = Total Petroleum Hydrocarbons- Gasoline Range
TPH-Dx = Total Petroleum Hydrocarbons- Diesel Range
NDMA = Nitrosodimethylamine
S2 = Larson AFB Titan Missile Facility S-2 Area Groundwater
GW = Groundwater
° = Degrees
VOCs = Volatile Organic Compounds
PCBs = Polychlorinated biphenyls
UDMH = Unsymmetrical Nitrosodimethylhydrazine

4.0 QUALITY ASSURANCE/QUALITY CONTROL

A total of four drinking water samples were analyzed for VOC; SVOC; TAL Metals; TPH-g; TPH-d; perchlorate; 1,4-dioxane; and NDMA. Three drinking water samples were analyzed for UDMH, the duplicate sample was not analyzed for UDMH. Organic analysis was performed in accordance with the *USEPA Contract Laboratory Program Statement of Work for Trace Organic Analysis SOM01.1* (EPA 2005). Inorganic analysis was performed in accordance with *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis ILM05.3* (EPA 2004). TPH-d and TPH-g were analyzed by MEL in accordance with Ecology Method NWTPH-Dx and NWTPH-Gx, respectively. Perchlorate; NDMA; and 1,4-dioxane samples were analyzed by MEL in accordance with EPA SW-846 Methods 6860, 521, and 8270C, respectively. Specific quality assurance/quality control (QA/QC) requirements for analyses of the Titan S-2 site samples are presented in the CLP statement of work and the project SSSP (TL 2008a).

All data from analyses performed were reviewed and validated by an EPA or TL chemist. Data qualifiers were applied, as necessary, according to statements of work, analytical methods, and the following guidance:

- U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 2004).
- U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA 1999).
- Manchester Environmental Laboratory Quality Assurance Manual and Standard Operating Procedures.

Copies of the data QA memoranda are included in Appendix C.

4.1 Satisfaction of Data Quality Objectives

The data quality objectives (DQO) for this site were established using the *Guidance for the Data Quality Objective Process* (EPA 2000). The data quality achieved during field sample collected and sample analyses conducted at the laboratories produced sufficient data to meet DQO established in the SSSP (TL 2008).

4.2 Quality Assurance/Quality Control Samples

Samples were collected or processed in the field to assist analysis of QA/QC measures. QC samples included temperature blanks, a field duplicate, trip blanks, and an equipment rinsate blank. One temperature blank sample per shipment cooler was submitted; trip blank samples were submitted for VOC analysis only. QC samples for all analyses included matrix spike/duplicates (MS/MSD) at a rate of one sample per 20 sample media.

4.3 Project-Specific Data Quality Objectives

The following describes the laboratories' ability to meet project DQOs for precision, accuracy, and completeness, and the overall success of the field team and the laboratories at meeting

project DQOs for representativeness and comparability. The laboratory and field team were able to meet the project DQOs for all samples

4.3.1 Precision

Precision measures the reproducibility of the sampling and analytical methodology. Laboratory and field precision is defined as the relative percent difference (RPD) between duplicate sample analyses. The laboratory duplicate samples measure the precision of the analytical method.

The RPD values were reviewed for all samples. No sample results were qualified solely based on laboratory duplicate QC outliers.

4.3.2 Accuracy

Accuracy measures the reproducibility of sampling and analytical methodology. Laboratory accuracy is defined as the spike % recovery (%R).

Antimony, chromium, magnesium, and lead were qualified as U due to the presence of those constituents in the laboratory preparation blanks.

4.3.3 Completeness

Data completeness is defined as the percentage of usable data (usable data divided by the total possible data). All laboratory data were reviewed for data validity and usability.

Out of a total of 648 data points, 0.6% were qualified due to instrument calibration and 0.8% were qualified due to extremely low and unacceptable instrument response.

4.3.4 Representativeness

Data representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point or environmental condition. The number and selection of samples were determined in the field to account accurately for site variations and sample matrices. The DQO for representativeness of 90% was met.

4.3.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Data produced for this site followed applicable field sampling techniques and specific analytical methodology as applied to groundwater. The DQO for comparability was met.

5.0 ANALYTICAL RESULTS REPORTING AND BACKGROUND SAMPLES

This section describes analytical results reporting, sample locations, and analytical results of SI samples obtained from potential targets. The sampling rationale and analytical results are summarized in Sections 5, 6, and 7 of this report. Drinking water sample results for inorganic and organic data are summarized in Tables 5-1 and 5-2, respectively. The complete set of laboratory analytical data sheets is located in Appendix C.

5.1 Analytical Results Evaluation Criteria

Analytical results presented in the summary tables show all compounds detected above laboratory detection limits. Analytical results indicating significant concentrations above background is considered elevated and will be indicated by a **bold** type and underlined. The concentration of a hazardous substance is considered to be elevated if the concentration is detected at greater than or equal to three times the concentration detected in the site-specific background or reference sample. In the case where a hazardous substance is undetected in the background or reference sample, any concentration detected at equal to or greater than the background or reference sample's reporting limit is considered to be elevated.

Groundwater samples were compared to the EPA Primary and Secondary Drinking Water Maximum Contaminant Levels (MCL). Analytical results detected above MCL are indicated in **bold**.

5.1.1 Analytical Sample Results Reporting

Based on EPA Region 10 policy, evaluation of aluminum, calcium, iron, magnesium, potassium, and sodium (common earth crust elements) is beyond the scope of this report. For this reason, these elements are not discussed.

5.2 Background Samples

Background sample results for drinking water samples are shown in Tables 5-1 and 5-2. The background sample locations are depicted in Figure 3-1.

5.2.1 Background Drinking Water

5.2.1.1 Sample Location

One background drinking water sample was collected from an area upgradient of the former Titan S-2 facility. The background sample was collected from a municipal well installed approximately 857 feet bgs. Water well reports indicate that the well is not screened. It is assumed that water enters the well through the bottom of the casing (Ecology 2006).

5.2.1.2 Sample Results

For background drinking water well sample S2-GW-01, four inorganic constituents were detected; one organic constituent was detected. The inorganic constituents and the concentrations were: barium at 12.7 microgram per liter (ug/L), selenium at 3.6J ug/L, vanadium at 24.3J ug/L, and zinc at 4.8J ug/L. Trichloroethene was detected at a concentration of 0.53JQ ug/L. No concentrations were detected above the MCLs.

No UDMH or NDMA was detected in the background drinking water well samples. The complete set of sample results are presented in the data package located in Appendix C.

Table 5-1
Inorganic Analytical Results Summary – Drinking Water Samples

Table 5-1
Inorganic Analytical Results Summary - Drinking Water Samples
Larson Air Force Base Titan Missile Facility S-2 Area Groundwater
Warden, Grant County, Washington

		EPA Sample ID	8434000	8434001	8434002	8434007
		CLP Sample ID	MJAH96	MJAH97	MJAH98	MJAHA4
		START-3 Sample ID	S2-GW-01	S2-GW-02	S2-GW-03	S2-GW-04
TAL Metals (ug/L)	**MCL**		**Background**	**Downgradient**		
Arsenic	10		11.1 U	2.6 J	-	3.0 J
Barium	200		12.7 J	16.0 J	32.9 J	15.9 J
Chromium	100		1.0 U	-	**4.3 J**	-
Nickel	NA		44.4 U	2.5 J	2.1 J	3.2 J
Selenium	50		3.6 J	3.6 J	-	-
Silver	NA		0.74 J	**4.2 J**	-	**3.4 J**
Vanadium	NA		24.3 J	43.6 J	-	43.5 J
Zinc	500**		4.8 J	**238**	-	**230**

Key:

**	= Secondary Standards
-	= Analyte not detected
Bold	= Concentration exceeds MCL standards
Bold and Underlined	= Concentration elevated when compared to background
CLP Sample ID	= Contract Laboratory Program sample identification number
EPA Sample ID	= Regional EPA sample identification number
GW	= Groundwater
ID	= Identification
J	= The analyte was positively identified. The associated numerical result is an estimate.
ug/L	= Micrograms per liter
NA	= Not available
MCL	= Maximum Contaminant Level; EPA Primary and Secondary Drinking Water Standards.
S-2	= Larson Air Force Base Titan Missile Facility S-2 Area Groundwater
TAL	= Total Analyte List
U	= The material was analyzed for but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
**	= Secondary Standard

Table 5-2
Organic Analytical Results Summary – Drinking Water Samples

Table 5-2
Organic Analytical Results Summary - Drinking Water Samples
Larson Air Force Base Titan Missile Facility S-2
Warden, Grant County, Washington

	EPA Sample ID	8434000	8434001	8434002	8434007
	CLP Sample ID	JAH96	JAH97	JAH98	JAHA4
	START-3 Sample ID	S2-GW-01	S2-GW-02	S2-GW-03	S2-GW-04
Analytes (ug/L)	**MCL**	**Background**	**Downgradient**		
Volatile Organic Compounds (ug/L)					
1,1-Dichloroethene	7	5.0 U	1.0 JQ	0.86 JQ	0.84 JQ
Trichloroethene	5	0.53 JQ	-	-	-
Semivolatile Organic Compounds (ug/L)					
Pyrene	NA	5.0 U	0.57 JQ	-	-
Pesiticide and PCB (ug/L)					
Gamma-BHC (Lindane)	0.2	0.050 U	0.0070 JQ	-	0.015 JQ

Key:

-	= Analyte not detected
Bold	= Concentration exceeds PRG standards
Bold and Underlined	= Concentration elevated when compared to background
CLP Sample ID	= Contract Laboratory Program sample identification number
EPA Sample ID	= Regional EPA sample identification number
GW	= Groundwater
ID	= Identification
J	= The analyte was positively identified. The associated numerical result is an estimate.
ug/L	= Micrograms per liter
NA	= Not available
MCL	= Maximum Contaminant Level; EPA Primary and Secondary Drinking Water Standards.
S-2	= Larson Air Force Base Titan Missile Facility S-2 Area Groundwater
U	= The material was analyzed for but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
Q	= the result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs)

6.0 POTENTIAL SOURCES

The potentially identified source in the Titan S-2 area is the potentially contaminated groundwater. Potential contaminants of concern include Target Compound List (TCL) VOCs, SVOCs, pesticides and PCBs; 1,4-dioxane; TPH-diesel and gasoline range constituents; UDMH; NDMA; TAL metals; and perchlorate.

As the focus of this SI was to characterize groundwater and any off-site contamination, no samples were collected from the former Titan S-2 facility. Groundwater contamination is discussed in Section 7.0.

7.0 MIGRATION PATHWAY AND TARGETS

The following section describes the migration pathways and potential targets within the site range of influence. Analytical results are summarized in Tables 5-1 and 5-2. Analytical data QA forms from laboratory analysis are provided in Appendix C. This section discusses the groundwater migration pathway (subsection 7.1) and surface water migration pathway (subsection 7.2).

7.1 Groundwater Migration Pathway

This subsection presents the pathway description, targets, sample locations, and sample results for the groundwater migration pathway.

7.1.1 Pathway Description

The Titan S-2 facility is located in the northwestern corner of the Columbia Plateau regional aquifer system, which occupies approximately 50,600 square miles, and extends across a small part of northern Idaho, northeastern Oregon, and a large part of southeastern Washington (Whitehead 1994). Miocene basaltic rocks are generally the major aquifers. The Grande Ronde Basalt is the most extensive basalt formation that underlies the Columbia Plateau. The extent of the plateau coincides with the limits of the Grande Ronde Basalt (Whitehead 1994).

Three aquifers are present in the area of Titan S-2. The shallow aquifer is referred to as the shallow unconfined aquifer, and is approximately 75 feet bgs (E & E 2006). The second aquifer is a deeper aquifer generally referred to as the Wanapum aquifer, and is approximately 625 feet bgs (E & E 2006). The third aquifer, referred to as the Grande Ronde aquifer, underlies the Wanapum aquifer (E & E 2006). The groundwater flows south-southwest away from the town of Warden, Washington. The shallow groundwater flow may be affected by the pumping of irrigation canals located in proximity to Titan S-2 (USGS 1980). Available file material does not indicate if any of the aquifers are interconnected.

7.1.2 Targets

The target distance limit (TDL) for the groundwater migration pathway is a 4-mile radius that extends from the sources at a site. As the potential source identified is a groundwater plume which has not been fully characterized, the TDL is based upon the location of the former Titan S-2 facility. Figure 7-1 depicts the groundwater TDL for the former Titan S-2 site; Figure 3-1 depicts the wells within a four-mile radius from the Titan S-2 site that are registered with Ecology and which have locational information provided. Table 7-1 summarizes the population that depends on groundwater as a drinking water source within the 4-mile TDL.

Two deep wells located on the property supplied the water to the USAF facility and are 981 and 1,000 feet bgs, respectively (Ecology 2000). These wells are located in the powerhouse; however, they are no longer operational and the pumps have reportedly been removed.

Approximately 34 privately-owned wells are present within the 4-mile TDL; 5 of which are irrigation wells, 13 domestic drinking water wells, 3 municipal wells, 5 of which uses are

unknown, and 8 resource protection wells (Ecology 2006). Only wells in which locational information is known are depicted on Figure 3-1. There are three drinking water wells within 2 miles of the facility. It is estimated that domestic wells within 4 miles of the facility provide potable water to approximately 38 people, based on the 2000 U.S. Census Bureau average number of 2.92 persons per household, for Grant County, Washington (USCB 2007). Drinking water well S2-GW-02 is screened at 80-feet bgs (TechLaw 2008c). However, information documenting the screened interval for drinking water well S2-GW-02 was not available (Ecology 2006).

The Town of Warden's water system maintains three municipal wells (Well Nos. 4, 5 and 6) located inside of the city limits, which provide potable water to approximately 1,500 customers (USDHHS 2005). Well No. 4 is approximately 360 feet deep and is screened at 80 feet bgs. Well No. 5 also is approximately 360 feet deep and is screened at 54 feet bgs. Well No. 6 is approximately 830 feet deep; however, water well reports indicate that the well is not screened It is assumed that water enters the well through the bottom of the casing (Ecology 2006; USDHHS 2005). Well Nos. 5 and 6 are the two primary drinking water wells (USDHHS 2005). Well No. 4 is being decommissioned because of ethylene dibromide contamination (E & E 2006). Well No. 5 is also contaminated with ethylene dibromide; however, the city of Warden is attempting to save the well. Well No. 5 is completed in the Wanapum Aquifer (E & E 2006). Reportedly, Well No. 6 has shown no signs of contamination. Well No. 6 withdraws potable water from a combination of the Wanapum and Grande Ronde aquifers (E & E 2005). Well Nos. 4 and 5 are located in the western section of Warden, Washington, and are spaced approximately 1,000 feet apart (USDHHS 2005). Furthermore, Warden municipal wells are used for commercial food preparation and are located within a wellhead protection area (E & E 2006). Two potato processing plants, located in Warden, Washington, use between 1.2 and 1.5 million gallons of water per day from the municipal wells (E & E 2006).

7.1.3 Groundwater Sample Locations

Groundwater drinking water samples were collected from four area groundwater wells, including one duplicate well and one background groundwater well. The samples were collected directly from the spigot, as close to the well pump as possible. The specific location of the groundwater samples is provided in Figure 3-1.

7.1.4 Groundwater Sample Results

Inorganic sample results are depicted in Table 5-1; organic sample results are depicted in Table 5-2 for comparison purposes, the EPA Primary and Secondary Drinking Water MCL are provided in each table. Only detected constituents are included in the table. The complete data set is located in Appendix C.

Three inorganic constituents were detected at elevated concentrations in groundwater wells when compared to the background groundwater well. The constituents and the concentrations are as follows: chromium at 4.3J ug/L, silver at a range of 3.4J to 4.2 J ug/L, and zinc at a range of 230 to 238 ug/L. No organic constituents were detected at elevated concentration in groundwater samples. No concentrations of inorganic or organic constituents detected exceeded the EPA MCLs.

7.2 Surface Water Migration Pathway

This subsection presents the pathway description, targets, sample locations, and sample results for the surface water migration pathway.

7.2.1 Pathway Description

The Titan S-2 site lies within the Lower Crab Creek Watershed (EPA 2007). The two-year, 24-hour rainfall for Titan S-2 is 0.76 inches (NOAA 1973). The average annual net precipitation is 8.18 as measured at Othello, Washington, located approximately 16.24 miles southwest of Titan S-2 (WRCC 2002). Based on the size of the site and the surrounding topography, it is estimated that the drainage area surrounding the facility is 200 acres (E & E 2006). The elevation at the facility is approximately 1,312 feet amsl (USGS 1980).

Based on topographic maps, three overland flow segments (OFS) are located on the property, each leading to a separate probable point of entry (PPE): Unnamed Creek A and Unnamed Creek B. Unnamed Creek B has two PPEs. However, during the field sampling event, no channels or routes to either Unnamed Creek could be found. Therefore, the PPEs were based on topographic maps, although no samples were collected at the PPE due to a lack of a clear pathway.

Unnamed Creek A: Surface water runoff from the northern portion of the Titan S-2 facility potentially flows north, approximately 1.5 mile and enters Unnamed Creek A. Unnamed Creek A flows in a westerly direction for approximately 2 miles where it then flows southwest for about 4 miles. Unnamed Creek A then flows northwest for approximately 0.5 miles and then flows south again for about 8.5 miles through the town of Othello, Washington (USGS 1980). Unnamed Creek A appears to be small to moderate stream with an estimated flow rate of approximately 10 to 100 cubic feet per second (cfs) (EPA 1990).

Unnamed Creek B: Surface water runoff from the southern portion of the Titan S-2 facility potentially flows south, approximately 1 mile and enters Unnamed Creek B. Unnamed Creek B flows approximately 9 miles southwest and then approximately 6 miles southeast (USGS 1980) Unnamed Creek B TDL 3 flows approximately 8.75 miles southwest and then approximately 5.75 miles southeast (USGS 1980). Unnamed Creek B appears to be small to moderate stream with an estimated flow rate of approximately 10 to 100 cubic feet per second (cfs) (EPA 1990).

7.2.2 Targets

No drinking water intakes have been identified within the 15-mile TDL (see Figure 7-3). Resource targets include the use of groundwater for agriculture through the Columbia River Basin Project, an irrigation project in Central Washington that provides water for over 600,000 acres of agriculture (Cushing et. al, 1999).

7.2.3 Sample Locations

As no route of overland flow from the Titan S-2 facility to the creeks could be found, no samples were collected from the surface water pathway.

Figure 7-1
4-MILE RADIUS MAP

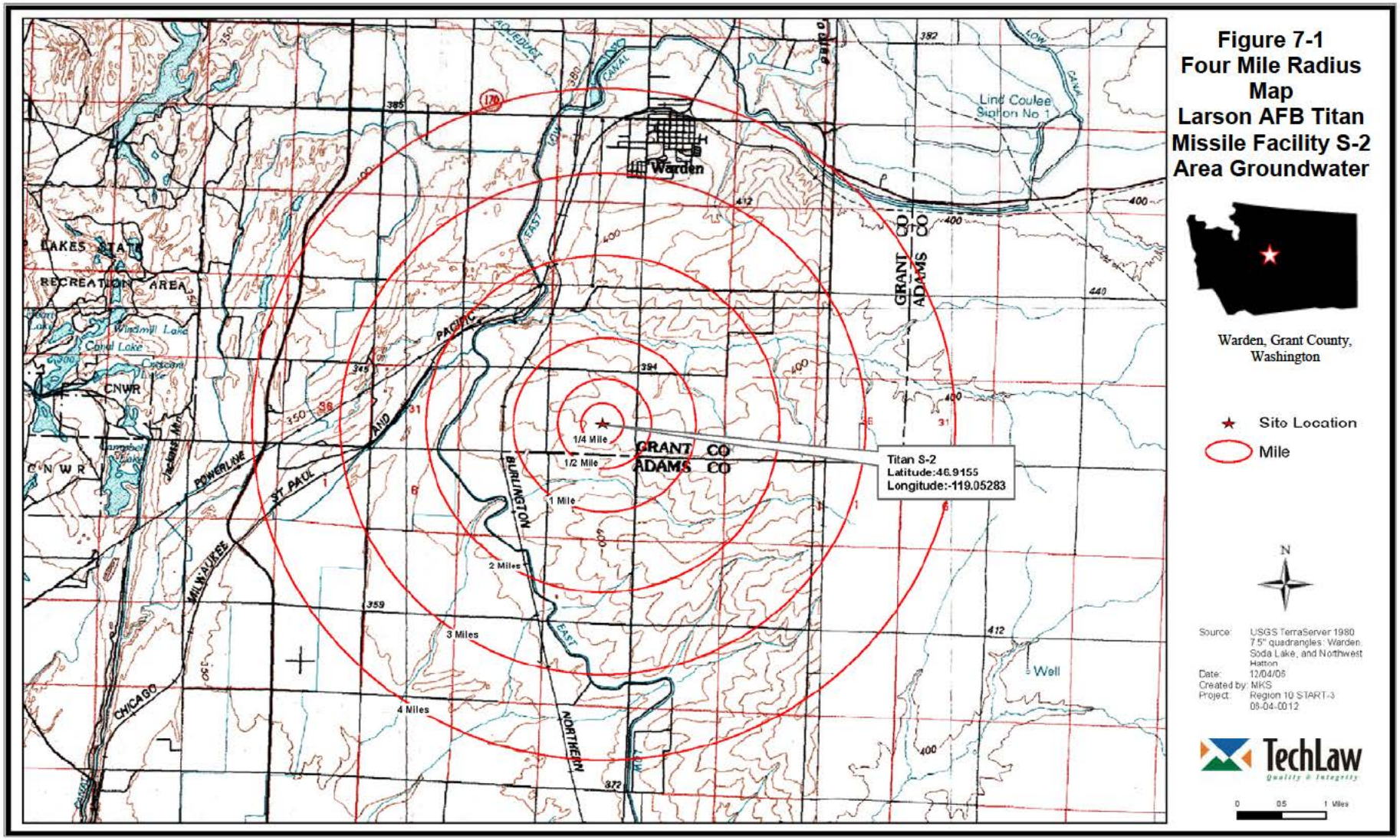
Figure 7-1
Four Mile Radius Map
Larson AFB Titan Missile Facility S-2 Area Groundwater
Warden, Grant County, Washington
Site Location
Mile
Titan S-2
Latitude:46.9155
Longitude:-119.05283
1/4 Mile
1/2 Mile
1 Mile
2 Miles
3 Miles
4 Miles
Warden
Lind Coulee Siphon No 1
LAKES STATE RECREATION AREA
CNWR
GRANT CO
ADAMS CO
POWERLINE
ST PAUL
MILWAUKEE
CHICAGO
BURLINGTON
NORTHERN
PACIFIC
EAST
Well
N
Source: USGS TerraServer 1980 7.5" quadrangles: Warden, Soda Lake, and Northwest Hatton
Date: 12/04/05
Created by: MKS
Project: Region 10 START-3 08-04-0012
TechLaw
Quality & Integrity
0 0.5 1 Miles

Figure 7-2
Surface water 15-mile TDL Map

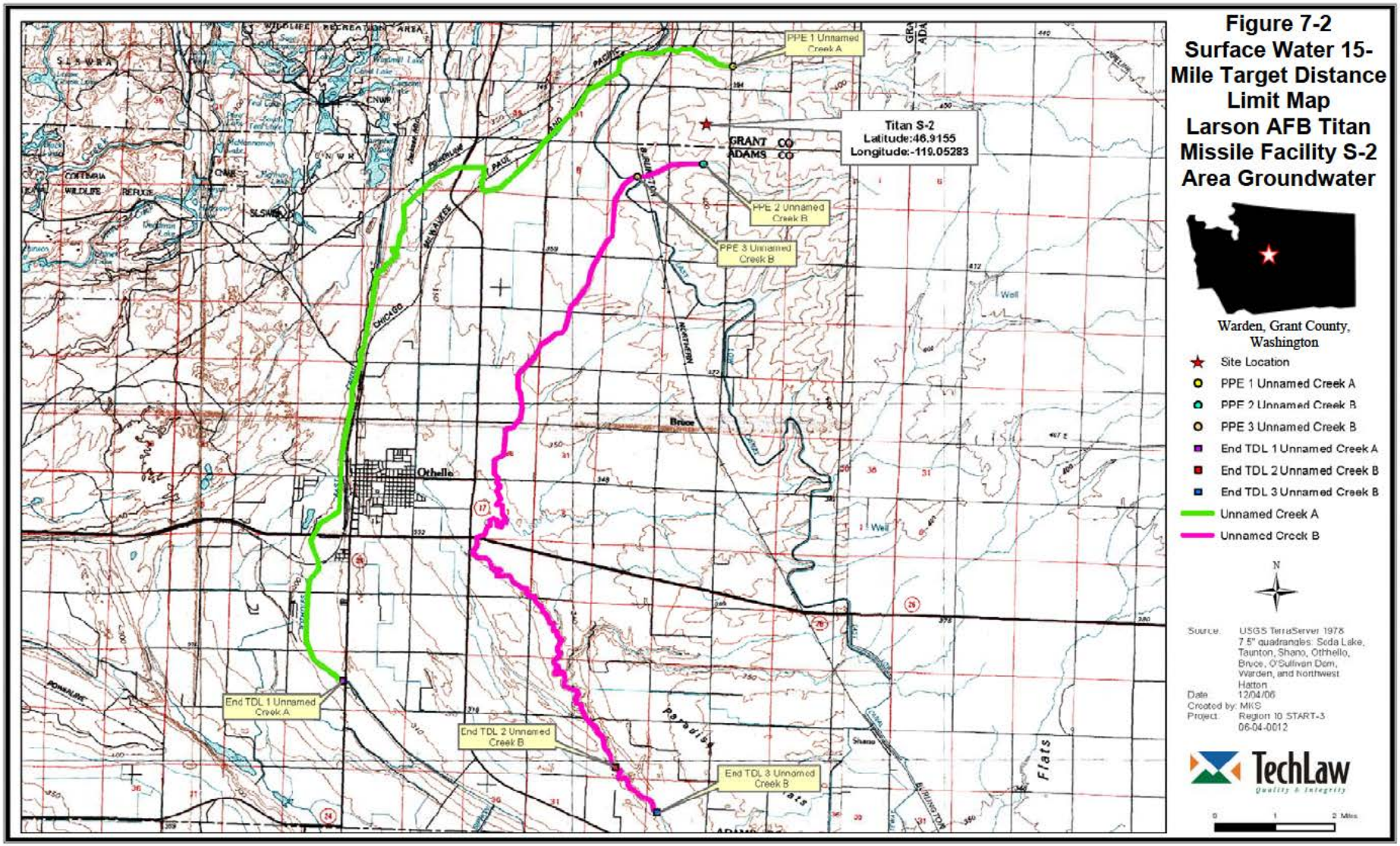
PPE 1 Unnamed Creek A
Titan S-2
Latitude:46.9155
Longitude:-119.05283
PPE 2 Unnamed Creek B
PPE 3 Unnamed Creek B
End TDL 1 Unnamed Creek A
End TDL 2 Unnamed Creek B
End TDL 3 Unnamed Creek B
Othello
Bruce
Paradise Flats
GRANT CO
ADAMS CO
Figure 7-2
Surface Water 15-Mile Target Distance Limit Map
Larson AFB Titan Missile Facility S-2 Area Groundwater
Warden, Grant County, Washington
Site Location
PPE 1 Unnamed Creek A
PPE 2 Unnamed Creek B
PPE 3 Unnamed Creek B
End TDL 1 Unnamed Creek A
End TDL 2 Unnamed Creek B
End TDL 3 Unnamed Creek B
Unnamed Creek A
Unnamed Creek B
N
Source: USGS TerraServer 1978 7.5" quadrangles: Soda Lake, Taunton, Shano, Othello, Bruce, O'Sullivan Dam, Warden, and Northwest Hatton
Date 12/04/06
Created by: MKS
Project: Region 10 START-3 06-04-0012
TechLaw
Quality & Integrity
0 1 2 Miles

Table 7-1
Groundwater Drinking Water Population Within A 4-Mile Radius
Titan S-2 Area Groundwater
Warden, Grant County, Washington

Distance Ring (miles)	Number of Wells	Well Use	Well Population[a]	Total Population Per Distance Ring
0 to 0.25	1	Use unknown	2.92	2.92
≥ 0.25 to 0.50	0	0	0	0
≥ 0.50 to 1.0	0	0	0	0
≥ 1.0 to 2.0	2	Domestic	2.92	5.84
≥ 2.0 to 3.0	4	Domestic	2.92	11.68
≥ 3.0 to 4.0	7	Domestic	2.92	1520.44
	2	Municipal	1500	
Total				1540.88

Sources: Ecology 2006, US Census 2007, Figure 4-A

KEY:

a = Population is based on an estimate of 2.92 indicated for Grant County in the 2000 census.

8.0 SUMMARY AND CONCLUSIONS

In October, 2008, START-3 conducted SI field sampling activities at the Titan S-2 site in Warden, Grant County, Washington. The Titan S-2 facility is a former missile launch site that operated from approximately 1962 to 1964. The SI objectives focused on the potential for off-site migration, therefore, only groundwater samples were collected. The groundwater and surface water migration pathways were the only pathways evaluated.

8.1 Sources

Potentially identified sources at the Titan S-2 site include the potentially contaminated groundwater and sediments surrounding the former Titan S-2 facility. Potential contaminants of concern throughout Titan S-2 include TCL VOC, SVOC, pesticides and PCB; 1,4-dioxane; TPH-diesel and gasoline range constituents; UDMH; NDMA; TAL metals; and perchlorate.

Constituents detected in source areas are discussed in Section 8.2.

8.2 Pathways

Contaminants may have migrated to the groundwater via subsurface flow. To determine if groundwater has been impacted by the former use of the facility, START-3 collected three groundwater samples from drinking water wells located downgradient of the former facility and one from an upgradient, background location. The inorganic constituents detected at elevated concentrations included chromium, silver, and zinc. No organic constituents were detected at elevated concentrations.

Although a surface water pathway exists, no direct route between the site and the Unnamed Creeks A or B could be found during the site field activities. Therefore, no surface water or sediment samples were collected.

8.3 Targets

The primary source of drinking water in the area of the Titan S-2 site is the groundwater. There are a total of 1,541 persons drinking water from a total of 16 wells located within a four-mile radius of the site, including two municipal wells.

No drinking water intakes have been identified within the 15-mile TDL. Water recreational activities such as boating and fishing do occur within the 15-mile TDL (Nelson 2006).

8.4 Conclusions

Results of the SI indicate that the former Titan S-2 facility is not a significant source of groundwater or surface water contamination. The SI documents that inorganic constituents were detected at elevated concentrations in groundwater; no constituents were detected at elevated concentrations in sediment samples. There were no detections of NDMA or UDMH.

9.0 REFERENCES

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APPENDIX A
PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPH #01

Description: Photograph of the Warden Municipal Well House Number 7 and location of background drinking water sample S2-GW-01.

Taken by:	Lesa Nelson, TechLaw	Direction:	Northeast
Witness:	Bryan Berna, TechLaw	Date:	October 21, 2008

PHOTOGRAPH #02

Description: Photograph of the Warden Municipal Well Number 7 spigot and location of background drinking water sample S2-GW-01.

Taken by:	Lesa Nelson, TechLaw	Direction:	Northeast
Witness:	Bryan Berna, TechLaw	Date:	October 21, 2008

PHOTOGRAPH #03

Description: Photograph of the Warden Municipal Well Number 7 spigot and location of background drinking water sample S2-GW-01.

Taken by:	Lesa Nelson, TechLaw	Direction:	Northeast
Witness:	Bryan Berna, TechLaw	Date:	October 21, 2008

PHOTOGRAPH #04

Description: Photograph of the spigot from which drinking water sample S2-GW-02 and duplicate sample S2-GW-04 were collected.

Taken by:	Lesa Nelson, TechLaw	Direction:	North
Witness:	Bryan Berna, TechLaw	Date:	October 21, 2008

PHOTOGRAPH #05

Description: Photograph of the spigot from which drinking water sample S2-GW-03 was collected.

Taken by:	Lesa Nelson, TechLaw	Direction:	North
Witness:	Bryan Berna, TechLaw	Date:	October 21, 2008

APPENDIX B
GPS SAMPLE LOCATION DATA

Appendix B
Sample Locations
Global Positioning System Coordinates
Larson AFB Titan Missile Facility S-2 Area Groundwater

Location ID	Trimble GEO-XH GPS Pocket PC	Garmin Hand Held eTrex Vista
S2-GW-01	46.96589864' North / 119.0270040' West	46.9590' North / 119.02702' West
S2-GW-02	46.88288947' North / 119.05774428' West	46.88300' North / 119.05742' West
S2-GW-03	46.92336522' North / 119.0687551' West	46.92336' North / 119.06874' West
S2-GW-04	46.88288947' North / 119.05774428' West	46.88300' North / 119.05742' West

APPENDIX C
DATA VALIDATON MEMORANDA AND LABORATORY DATA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Larson AFB

Lot #: D8J230221

Kim Whitlock

Techlaw, Inc.
205 West Wacker Dr.
Suite 1622
Chicago, IL 60606

TESTAMERICA LABORATORIES, INC.
(DENVER)

Donna R. Rydberg
Project Manager

October 31, 2008

Report Contents	Number of Pages

Standard Deliverables

*(The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.)*

Number of Pages
124

- **Table of Contents**
- **Case Narrative**
- **Executive Summary – Detection Highlights**
- **Methods Summary**
- **Method/Analyst Summary**
- **Sample Summary**
- **QC Data Association Summary**
- **CLP –Like Forms**
- **Sample Receipt Checklist**
- **Chain-of –Custody**

Supporting Documentation

(Note: A one-page "Description of Supporting Documentation" is provided at the beginning of this section.).

	Check below when supporting documentation is present.
• Volatile GC/MS	
• Semivolatile GC/MS	
• Volatile GC	
• Semivolatile GC	
• LC/MS or HPLC	
• Metals	
• General Chemistry	X
• Subcontracted Data	

Case Narrative

Enclosed is the report for seven samples received at TestAmerica's Denver laboratory on October 23, 2008. The results included in this report have been reviewed for compliance with TestAmerica's Quality Assurance/Quality Control (QA/QC) plan. The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interferences or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated. A summary of quality control parameters is provided below.

The test results shown in this report meet all requirements of NELAC. Any exceptions are noted below.

Quality Control Summary for Lot D8J230221

Sample Receiving
The samples presented in this report were received in good condition at the laboratory at temperatures of 4.9°C and 4.7°C.

Holding Times
Holding times were met.

Method DEN SOP- UDMH
No anomalies were observed.

EXECUTIVE SUMMARY - Detection Highlights

D8J230221

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD

NO DETECTABLE PARAMETERS

METHODS SUMMARY

D8J230221

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
UDMH	SOP UDMH	

References:

SOP

METHOD / ANALYST SUMMARY

D8J230221

ANALYTICAL METHOD	ANALYST	ANALYST ID
SOP UDMH	ReAnna Davis	002266

References:

SOP

SAMPLE SUMMARY

D8J230221

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
K1F24	001	08434000 S2-GW-01	10/21/08	12:20
K1F26	002	08434001 S2-GW-02	10/21/08	13:30
K1F28	003	08434002 S2-GW-03	10/21/08	15:00
K1F29	004	08434101 S3-GW-02	10/22/08	10:15
K1F3D	005	08434103 S3-SW-02	10/22/08	12:10
K1F3G	006	08434104 S3-SW-03	10/22/08	12:00
K1F3H	007	08434105 S3-SW-05	10/22/08	12:45

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

QC DATA ASSOCIATION SUMMARY

D8J230221

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SOP UDMH		8303286	8303187
002	WATER	SOP UDMH		8303286	8303187
003	WATER	SOP UDMH		8303286	8303187
004	WATER	SOP UDMH		8303286	8303187
005	WATER	SOP UDMH		8303286	8303187
006	WATER	SOP UDMH		8303286	8303187
007	WATER	SOP UDMH		8303286	8303187

Test America Denver

(Formerly STL Denver)

GENERAL CHEMISTRY

CLP-Like Forms

Lot ID: D8J230221

Client: Techlaw

Method: STL-SOP UDMH

Associated Samples: -001 through -007

Batch: 8303286

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	08434000 S2-GW-01
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J230221-001
Matrix:	WATER	**Lab WorkOrder:**	K1F24
% Moisture:	N/A	**Date/Time Collected:**	10/21/08 12:20
Basis:	Wet	**Date/Time Received:**	10/23/08 09:00
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/28/08 21:53
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

CAS No.	Analyte	Conc.	MDL	RL	Q
57-14-7	UDMH	2.3	2.3	10	U

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	08434001 S2-GW-02
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J230221-002
Matrix:	WATER	**Lab WorkOrder:**	K1F26
% Moisture:	N/A	**Date/Time Collected:**	10/21/08 13:30
Basis:	Wet	**Date/Time Received:**	10/23/08 09:00
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/28/08 22:27
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

CAS No.	Analyte	Conc.	MDL	RL	Q
57-14-7	UDMH	2.3	2.3	10	U

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	08434002 S2-GW-03
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J230221-003
Matrix:	WATER	**Lab WorkOrder:**	K1F28
% Moisture:	N/A	**Date/Time Collected:**	10/21/08 15:00
Basis:	Wet	**Date/Time Received:**	10/23/08 09:00
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/28/08 23:02
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

CAS No.	Analyte	Conc.	MDL	RL	Q
57-14-7	UDMH	2.3	2.3	10	U

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	08434101 S3-GW-02
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J230221-004
Matrix:	WATER	**Lab WorkOrder:**	K1F29
% Moisture:	N/A	**Date/Time Collected:**	10/22/08 10:15
Basis:	Wet	**Date/Time Received:**	10/23/08 09:00
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/28/08 23:37
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

CAS No.	Analyte	Conc.	MDL	RL	Q
57-14-7	UDMH	2.3	2.3	10	U

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	08434103 S3-SW-02
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J230221-005
Matrix:	WATER	**Lab WorkOrder:**	K1F3D
% Moisture:	N/A	**Date/Time Collected:**	10/22/08 12:10
Basis:	Wet	**Date/Time Received:**	10/23/08 09:00
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/29/08 00:11
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

CAS No.	Analyte	Conc.	MDL	RL	Q
57-14-7	UDMH	2.3	2.3	10	U

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	08434104 S3-SW-03
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J230221-006
Matrix:	WATER	**Lab WorkOrder:**	K1F3G
% Moisture:	N/A	**Date/Time Collected:**	10/22/08 12:00
Basis:	Wet	**Date/Time Received:**	10/23/08 09:00
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/29/08 00:46
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

CAS No.	Analyte	Conc.	MDL	RL	Q
57-14-7	UDMH	2.3	2.3	10	U

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	08434105 S3-SW-05
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J230221-007
Matrix:	WATER	**Lab WorkOrder:**	K1F3H
% Moisture:	N/A	**Date/Time Collected:**	10/22/08 12:45
Basis:	Wet	**Date/Time Received:**	10/23/08 09:00
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/29/08 01:21
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

CAS No.	Analyte	Conc.	MDL	RL	Q
57-14-7	UDMH	2.3	2.3	10	U

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J290000-286B
Matrix:	WATER	**Lab WorkOrder:**	K1VAW
% Moisture:		**Date/Time Collected:**	
Basis:	Wet	**Date/Time Received:**	
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/28/08 20:09
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

CAS No.	Analyte	Conc.	MDL	RL	Q
57-14-7	UDMH	2.3	2.3	10	U

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J290000-286C
Matrix:	WATER	**Lab WorkOrder:**	K1VAW
% Moisture:	N/A	**Date/Time Collected:**	
Basis:	Wet	**Date/Time Received:**	
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/28/08 19:34
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

Analyte	True	Found	%Rec	Q	Limits
UDMH	100	98.6	99		81 - 121

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	
Lot/SDG Number:	D8J230221	**Lab Sample ID:**	D8J290000-286L
Matrix:	WATER	**Lab WorkOrder:**	K1VAW
% Moisture:	N/A	**Date/Time Collected:**	
Basis:	Wet	**Date/Time Received:**	
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303286	**Date/Time Analyzed:**	10/28/08 19:51
Sample Aliquot:		**Instrument ID:**	IC9
Dilution Factor:	1		

Analyte	True	Found	C	% Rec	Q	RPD	Q	QC Limits	
								% Rec	RPD
UDMH	100	98.5		99		0.10		81 - 121	20

U Result is less than the method detection limit (MDL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	LAB MS/MSD
Lot/SDG Number:	D8J230221	**MS Lab Sample ID:**	D8J270156-001S
Matrix:	WATER	**MS Lab WorkOrder:**	K1N7M
% Moisture:	N/A	**Date/Time Collected:**	10/27/08 10:15
Basis:	Wet	**Date/Time Received:**	10/27/08 13:25
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303281	**Date/Time Analyzed:**	10/28/08 20:43
MS Sample Aliquot:		**Instrument ID:**	IC9
MS Dilution Factor:	1		

Analyte	Spike Amount	Sample Result	C	MS Result	C	% Rec	Q	QC Limit
UDMH	40.0	2.3	U	46.9		117		32 - 183

U Result is less than the reporting limit (RL).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Techlaw Inc

Wet Chemistry Analysis Data Sheet

Lab Name:	TESTAMERICA DENVER	**Client Sample ID:**	LAB MS/MSD
Lot/SDG Number:	D8J230221	**MSD Lab Sample ID:**	D8J270156-001D
Matrix:	WATER	**MSD Lab WorkOrder:**	K1N7M
% Moisture:	N/A	**Date/Time Collected:**	10/27/08 10:15
Basis:	Wet	**Date/Time Received:**	10/27/08 13:25
Analysis Method:	UDMH	**Date Leached:**	
Unit:	ug/L	**Date/Time Extracted:**	10/28/08 16:23
QC Batch ID:	8303281	**Date/Time Analyzed:**	10/28/08 21:01
MSD Sample Aliquot:		**Instrument ID:**	IC9
MSD Dilution Factor:	1		

Analyte	Spike Amount	Sample Result	C	MSD Result	C	% Rec	Q	RPD	Q	QC Limits	
										% Rec	RPD
UDMH	40.0	2.3	U	46.9		117		0.0		32 - 183	30

U Result is less than the reporting limit (RL).

TestAmerica Denver

Sample Receiving Checklist

Lot #: D8J230224 Date/Time Received: 10/23/08 0900

Company Name & Sampling Site: Techlaw

PM to Complete This Section: *Yes* *No* *Yes* *No*
Residual chlorine check required: ☐ ☒ Quarantined: ☐ ☒

Quote #: 81230

Special Instructions:

Time Zone:
• EDT/EST • CDT/CST • MDT/MST • PDT/PST • OTHER

Unpacking Checks:

Cooler #(s): _____ _____ _____ _____ _____ _____ _____ _____

Temperatures (°C): 4.9 4.7 _____ _____ _____ _____ _____ _____

N/A	*Yes*	*No*		*Initials*
☐	☒	☐	1. Cooler seals intact? (N/A if hand delivered) If no, document on CUR.	LM
	☒	☐	2. Coolers scanned for radiation. Is the reading ≤ to background levels? Yes: ☑ No: ____	
	☒	☐	3. Chain of custody present? If no, document on CUR.	
	☐	☒	4. Bottles broken and/or are leaking? If yes, document on CUR.	
	☐	☒	5. Multiphasic samples obvious? If yes, document on CUR.	
	☒	☐	6. Proper container & preservatives used? (ref. Attachment D of SOP# DV-QA-0003) If no, document on CUR.	
☒	☐	☐	7. pH of all samples checked and meet requirements? If no, document on CUR.	
	☒	☐	8. Sufficient volume provided for all analysis requested? (ref. Attachment D of SOP# DV-QA-0003) If no, document on CUR, and contact PM before proceeding.	
	☒	☐	9. Did chain of custody agree with labels ID and samples received? If no, document on CUR.	
☒	☐	☐	10. Were VOA samples without headspace? If no, document on CUR.	
☒	☐	☐	11. Were VOA vials preserved? Preservative ☐HCl ☐4±2°C ☐Sodium Thiosulfate ☐ Ascorbic Acid	
	☐	☒	12. Did samples require preservation with sodium thiosulfate?	
☒	☐	☐	13. If yes to #11, did the samples contain residual chlorine? If yes, document on CUR.	
☒	☐	☐	14. Sediment present in dissolved/filtered bottles? If yes, document on CUR.	
☒	☐	☐	15. Is sufficient volume provided for client requested MS, MSD or matrix duplicates? If no, document on CUR, and contact PM before proceeding.	
	☐	☒	16. Receipt date(s) > 48 hours past the collection date(s)? If yes, notify PA/PM.	
	☒	☐	17 Are analyses with short holding times requested?	
	☐	☒	18. Was a quick Turn Around (TAT) requested?	

TestAmerica Denver

Sample Receiving Checklist

Lot # D8J230224

Login Checks:

N/A	Yes	No		Initials
	☑	☐	19. Sufficient volume provided for all analysis requested? (ref. Attachment D of SOP# DV-QA-0003) If no, document on CUR, and contact PM before proceeding.	
☑	☐	☐	20. Is sufficient volume provided for client requested MS, MSD or matrix duplicates? If no, document on CUR, and contact PM before proceeding.	
	☑	☐	21. Did the chain of custody includes "received by" and "relinquished" by signatures, dates, and times?	
☐	☑	☐	22. Were special log in instructions read and followed?	
☑	☐	☐	23. Were AFCEE metals logged for refrigerated storage?	
	☑	☐	24. Were tests logged checked against the COC? Which samples were confirmed? All	
☑	☐	☐	25. Was a Rush form completed for quick TAT?	
☐	☑	☐	26. Was a Short Hold form completed for any short holds?	
	☐	☑	27. Were special archiving instructions indicated in the General Comments? If so, what were they?	

Labeling and Storage Checks:

				Initials
☑	☐	☐	28. Was the subcontract COC signed and sent with samples to bottle prep?	
	☑	☐	29. Were sample labels double-checked by a second person?	
☑	☐	☐	30. Were sample bottles and COC double checked for dissolved/filtered metals by a second person?	
	☑	☐	31. Did the sample ID, Date, and Time from label match what was logged?	
☑	☐	☐	32. Were stickers for special archiving instructions affixed to each box? See #27	
☑	☐	☐	33. Were AFCEE metals stored refrigerated?	

Document any problems or discrepancies and the actions taken to resolve them on a Condition Upon Receipt Anomaly Report (CUR).

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USEPA Contract Laboratory Program
Generic Chain of Custody

4.9°c
10/23/08 [illegible]

Reference Case 37953
Client No:
SDG No:

L

Date Shipped:	10/21/2008
Carrier Name:	FedEx
Airbill:	862304165552
Shipped to:	Test America 4955 Arvada, CO 80002 (303) 736-0100

Chain of Custody Record

Sampler Signature: [signature]

	Relinquished By	(Date / Time)	Received By	(Date / Time)
1	[signature] 10/21/08 1630		FedEx 10/21/08 1630	
2			[signature] 10/23/08 0900	
3				
4				

For Lab Use Only

Lab Contract No: _____
Unit Price: _____
Transfer To: _____
Lab Contract No: _____
Unit Price: _____

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
08434000 S2-GW-01	Ground Water/ Lesa Nelson	L/G	UDMH (21)	(Ice Only) (1)	08434000	S: 10/21/2008 12:20	
08434001 S2-GW-02	Ground Water/ Anna Cornelious	L/G	UDMH (21)	(Ice Only) (1)	08434001	S: 10/21/2008 13:30	
08434002 S2-GW-03	Ground Water	L/G	UDMH (21)	(Ice Only) (1)	08434002	S: 10/21/2008 1500	

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC: S2-GW-01	Additional Sampler Signature(s): [signature]	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? __	Shipment Iced? __

UDMH = Unsymetrical Dimethyl Hydrazine

TR Number: 10-043013577-102108-0001

LABORATORY COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

4-7°
16 23 ed
.27

25

USEPA Contract Laboratory Program
Generic Chain of Custody

Reference Case 37954
Client No:
SDG No:

L

Date Shipped:	10/22/2008
Carrier Name:	FedEx
Airbill:	862304165563
Shipped to:	Test America 4955 Arvada, CO 80002 (303) 736-0100

Chain of Custody Record

Sampler Signature: [signature]

	Relinquished By	(Date / Time)	Received By	(Date / Time)
1	[signature]	10/22/08 1630	[signature] Fed Ex	10/22/08 1630
2			[signature]	10/23/08 0900
3				
4				

For Lab Use Only
Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
08434101 53-GW-02	Ground Water	L/G	UDMH (21)	(Ice Only) (1)	08434101	S: 10/22/2008	10:15	
08434103 53-SW-02	Surface Water	L/G	UDMH (21)	(Ice Only) (1)	08434103	S: 10/22/2008	12:10	
08434104 53-SW-03	Surface Water	L/G	UDMH (21)	(Ice Only) (1)	08434104	S: 10/22/2008	12:00	
08434105 53-SW-05	Surface Water	L/G	UDMH (21)	(Ice Only) (1)	08434105	S: 10/22/2008	1245 [initials]	

Shipment for Case Complete?Y	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s): [signature]	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___ Shipment Iced? ___

UDMH = Unsymetrical Dimethyl Hydrazine

TR Number: 10-043013577-102208-0003

LABORATORY COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

F2V5.1.047

General Chemistry

Supporting Documentation

Sample Sequence, Instrument Printouts, Calculations

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Method: Hydrazines 10-28-08

Batch #(s): 8303281-2-3-C

I certify that, to the best of my knowledge, the attached package represents a complete and accurate copy of the original data.

Signature/Date: 10/29/08

Batch: 8303281-2-3-6
MS: 8303187-8-9

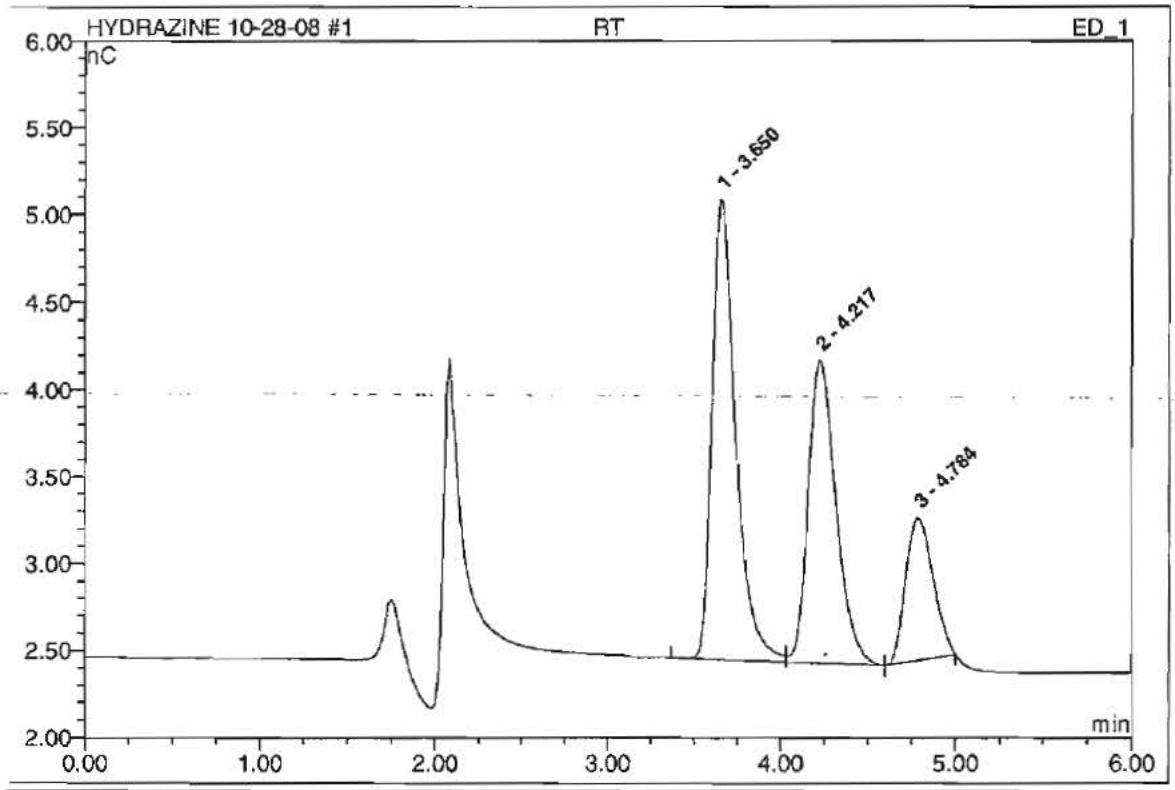
Sampl No.	Sample Name	Time	Dil.Fac.	Amount	Amount	Amount
				Hydrazine	MMH	UDMH
				ED_1	ED_1	ED_1
1	RT	10/28/2008 16:23	1.0000	n.a.	n.a.	n.a.
2	RINSE	10/28/2008 16:32	1.0000	n.a.	133.5536	n.a.
3	RINSE	10/28/2008 16:41	1.0000	n.a.	158.6771	n.a.
4	RT CHECK	10/28/2008 16:49	1.0000	102.3385	97.9060	184.9199
5	RINSE	10/28/2008 16:58	1.0000	n.a.	175.3747	n.a.
6	RINSE	10/28/2008 17:07	1.0000	n.a.	181.0169	n.a.
7	CAL 5ppb/10ppb	10/28/2008 17:15	1.0000	5.3367	5.1041	9.9147
8	RINSE	10/28/2008 17:24	1.0000	n.a.	190.0196	n.a.
9	CAL 10ppb/20ppb	10/28/2008 17:33	1.0000	9.7023	9.8223	19.5366
10	RINSE	10/28/2008 17:41	1.0000	n.a.	189.6848	n.a.
11	CAL 20ppb/40ppb	10/28/2008 17:50	1.0000	19.4802	19.9189	41.1434
12	RINSE	10/28/2008 17:59	1.0000	n.a.	195.8831	n.a.
13	CAL 50ppb/100ppb	10/28/2008 18:07	1.0000	48.2964	49.8211	101.1520
14	RINSE	10/28/2008 18:16	1.0000	n.a.	196.2850	n.a.
15	CAL 80ppb/160ppb	10/28/2008 18:25	1.0000	80.2562	80.4967	160.2625
16	RINSE	10/28/2008 18:33	1.0000	n.a.	190.4031	n.a.
17	CAL 100ppb/200ppb	10/28/2008 18:42	1.0000	101.9281	99.8368	197.9908
18	RINSE	10/28/2008 18:51	1.0000	n.a.	189.9100	n.a.
19	ICV 25ppb/50ppb	10/28/2008 18:59	1.0000	24.8097	25.7140	54.9844
20	RINSE	10/28/2008 19:08	1.0000	n.a.	189.7851	n.a.
21	ICB	10/28/2008 19:17	1.0000	n.a.	0.1413	n.a.
22	RINSE	10/28/2008 19:25	1.0000	n.a.	191.1400	n.a.
23	DCS-1 50ppb/100ppb	10/28/2008 19:34	1.0000	49.1843	48.3699	98.6290
24	RINSE	10/28/2008 19:43	1.0000	n.a.	190.3749	n.a.
25	DCS-2 50ppb/100ppb	10/28/2008 19:51	1.0000	49.3696	48.4273	98.5289
26	RINSE	10/28/2008 20:00	1.0000	n.a.	191.0989	n.a.
27	MB	10/28/2008 20:09	1.0000	n.a.	0.1889	n.a.
28	RINSE	10/28/2008 20:17	1.0000	n.a.	185.7435	n.a.
29	-1 D8J270156 K1N7M	10/28/2008 20:26	1.0000	n.a.	n.a.	n.a.
30	RINSE	10/28/2008 20:35	1.0000	n.a.	184.9999	n.a.

Sampl No.	Sample Name	Time	Dil.Fac.	Amount	Amount	Amount
				Hydrazine	MMH	UDMH
				ED_1	ED_1	ED_1
31	-1 K1N7M MS	10/28/2008 20:43	1.0000	24.4755	22.5857	46.9433
32	RINSE	10/28/2008 20:52	1.0000	n.a.	184.7047	n.a.
33	-1 K1N7M MSD	10/28/2008 21:01	1.0000	24.4816	22.6879	46.9433
34	RINSE	10/28/2008 21:09	1.0000	n.a.	178.4254	n.a.
35	CCV	10/28/2008 21:18	1.0000	49.2609	48.0316	96.6075
36	RINSE	10/28/2008 21:27	1.0000	n.a.	178.2662	n.a.
37	CCB	10/28/2008 21:35	1.0000	n.a.	0.2808	n.a.
38	RINSE	10/28/2008 21:44	1.0000	n.a.	178.1664	n.a.
39	-1 D8J230221 K1F24	10/28/2008 21:53	1.0000	n.a.	n.a.	n.a.
40	RINSE	10/28/2008 22:01	1.0000	n.a.	171.4689	n.a.
41	-1 MS K1F24	10/28/2008 22:10	1.0000	25.4747	23.3149	46.0632
42	RINSE	10/28/2008 22:19	1.0000	n.a.	165.7401	n.a.
43	-2 K1F26	10/28/2008 22:27	1.0000	1.2422	n.a.	n.a.
44	RINSE	10/28/2008 22:36	1.0000	n.a.	166.5142	n.a.
45	-2 MS K1F26	10/28/2008 22:45	1.0000	26.6206	24.0062	48.8975
46	RINSE	10/28/2008 22:53	1.0000	n.a.	161.1457	n.a.
47	-3 K1F28	10/28/2008 23:02	1.0000	n.a.	n.a.	n.a.
48	RINSE	10/28/2008 23:11	1.0000	n.a.	155.6668	n.a.
49	-3 MS K1F28	10/28/2008 23:19	1.0000	26.3698	23.6368	48.0391
50	RINSE	10/28/2008 23:28	1.0000	n.a.	149.1711	n.a.
51	-4 K1F29	10/28/2008 23:37	1.0000	n.a.	n.a.	n.a.
52	RINSE	10/28/2008 23:45	1.0000	n.a.	144.6250	n.a.
53	-4 MS K1F29	10/28/2008 23:54	1.0000	26.2714	23.6183	48.0054
54	RINSE	10/29/2008 0:03	1.0000	n.a.	138.9568	n.a.
55	-5 K1F3D	10/29/2008 0:11	1.0000	n.a.	n.a.	n.a.
56	RINSE	10/29/2008 0:20	1.0000	n.a.	129.5839	n.a.
57	-5 MS K1F3D	10/29/2008 0:29	1.0000	26.6323	23.5098	48.5360
58	RINSE	10/29/2008 0:37	1.0000	n.a.	129.7944	n.a.
59	-6 K1F3G	10/29/2008 0:46	1.0000	n.a.	n.a.	n.a.
60	RINSE	10/29/2008 0:55	1.0000	n.a.	127.3748	n.a.

Sampl No.	Sample Name	Time	Dil.Fac.	Amount	Amount	Amount
				Hydrazine	MMH	UDMH
				ED_1	ED_1	ED_1
61	-6 MS K1F3G	10/29/2008 1:03	1.0000	23.8067	21.2690	50.9350
62	RINSE	10/29/2008 1:12	1.0000	n.a.	122.1559	n.a.
63	-7 K1F3H	10/29/2008 1:21	1.0000	n.a.	n.a.	n.a.
64	RINSE	10/29/2008 1:29	1.0000	n.a.	124.8963	n.a.
65	-7 MS K1F3H	10/29/2008 1:38	1.0000	25.8267	23.1831	47.1052
66	RINSE	10/29/2008 1:47	1.0000	n.a.	120.3735	n.a.
67	CCV	10/29/2008 1:55	1.0000	48.4888	47.1664	95.9599
68	RINSE	10/29/2008 2:04	1.0000	n.a.	119.1853	n.a.
69	CCB	10/29/2008 2:13	1.0000	n.a.	n.a.	n.a.
70	END	10/29/2008 2:21	1.0000	n.a.	n.a.	n.a.

1 RT

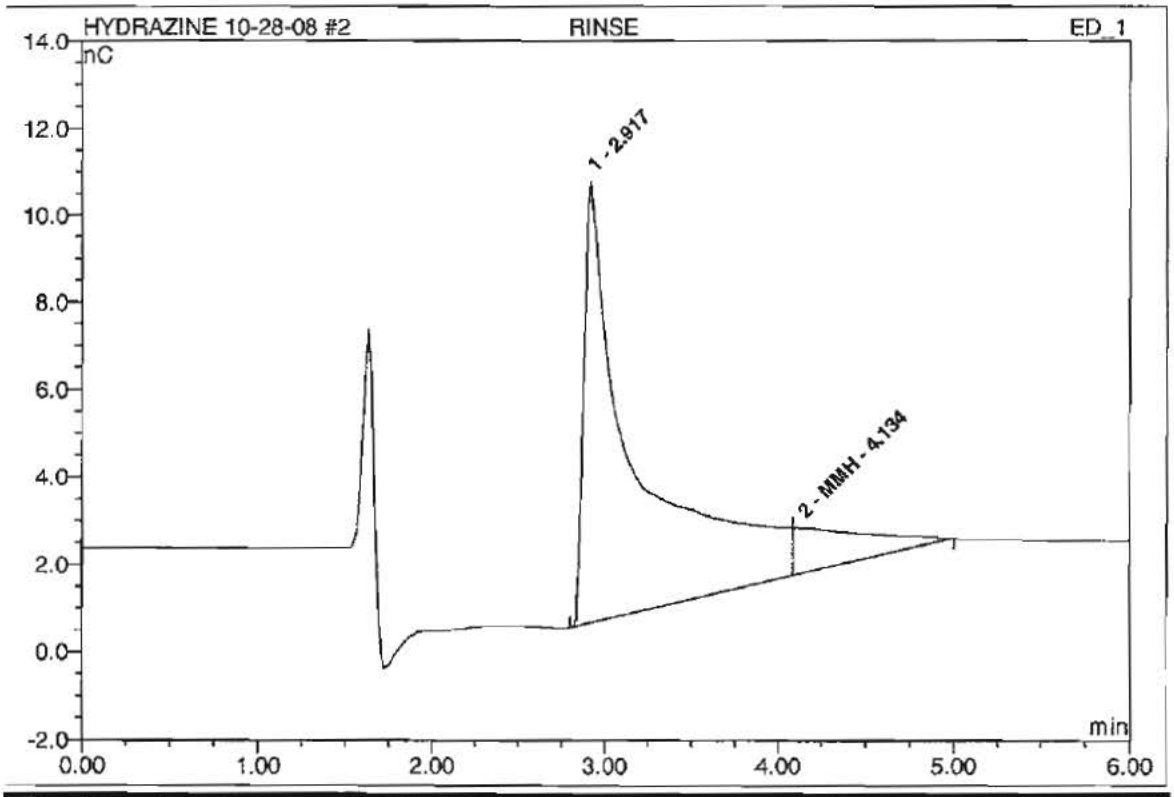
Sample Name:	**RT**	*Injection Volume:*	**200.0**
Vial Number:	**6**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 16:23**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.65	n.a.	2.636	0.418	47.17	n.a.	BM
2	4.22	n.a.	1.742	0.321	36.23	n.a.	Mb
3	4.78	n.a.	0.820	0.147	16.60	n.a.	bMB
Total:			5.197	0.88534	100.00	0.000	

2 RINSE

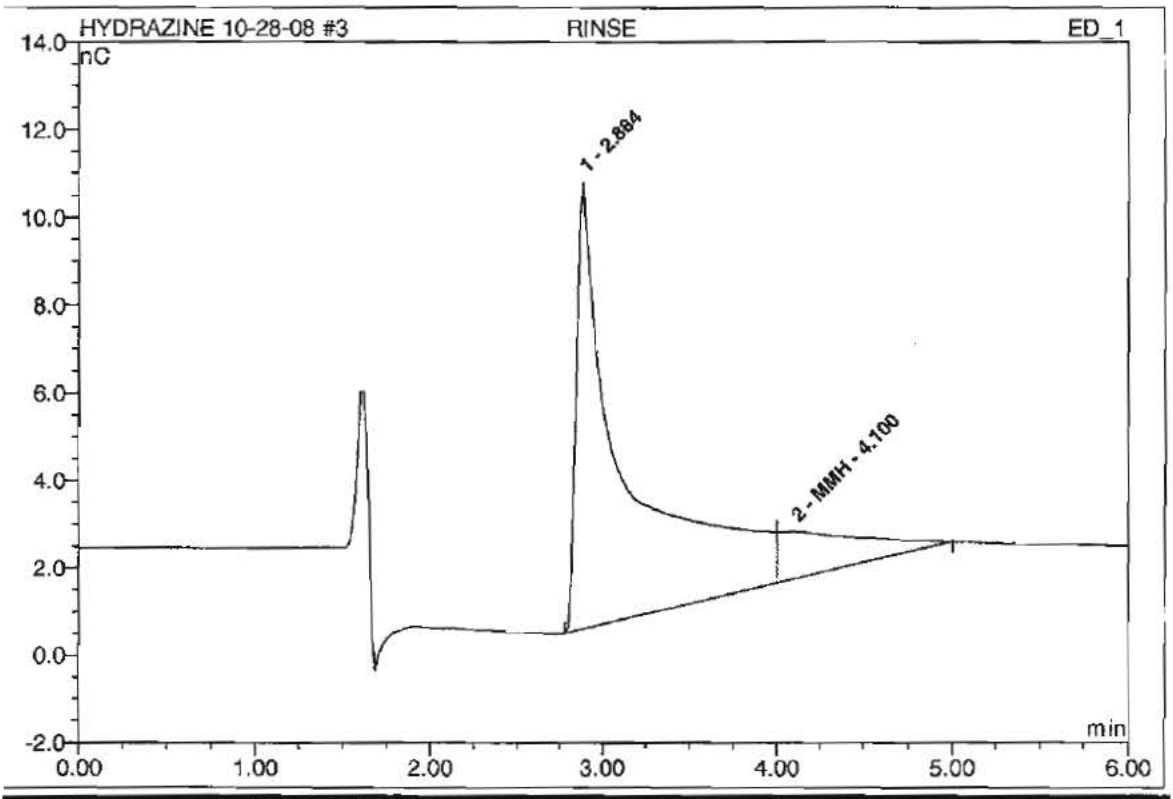
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**45**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 16:32**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.92	n.a.	10.101	3.572	88.09	n.a.	BM
2	4.13	MMH	1.038	0.483	11.91	133.55	MB
Total:			11.139	4.05468	100.00	133.554	

3 RINSE

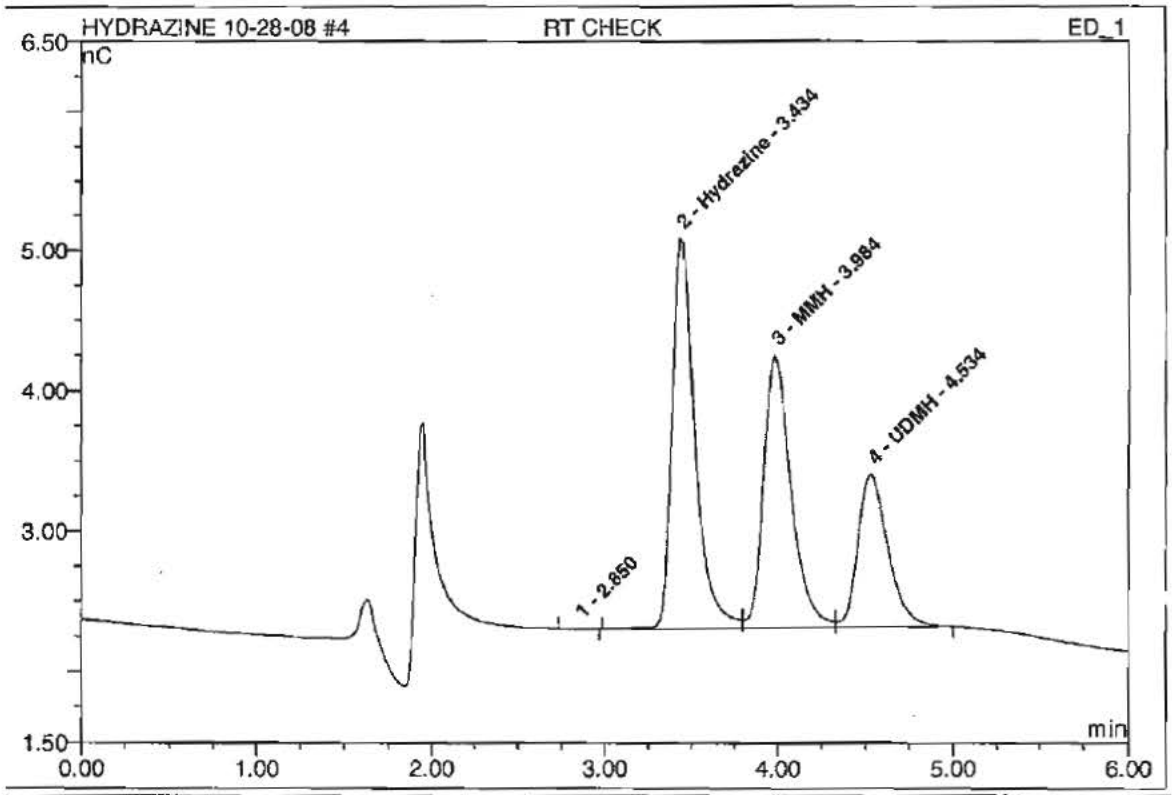
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**46**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 16:41**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.88	n.a.	10.183	3.404	85.57	n.a.	BM
2	4.10	MMH	1.081	0.574	14.43	158.68	MB
Total:			11.264	3.97747	100.00	158.677	

4 RT CHECK

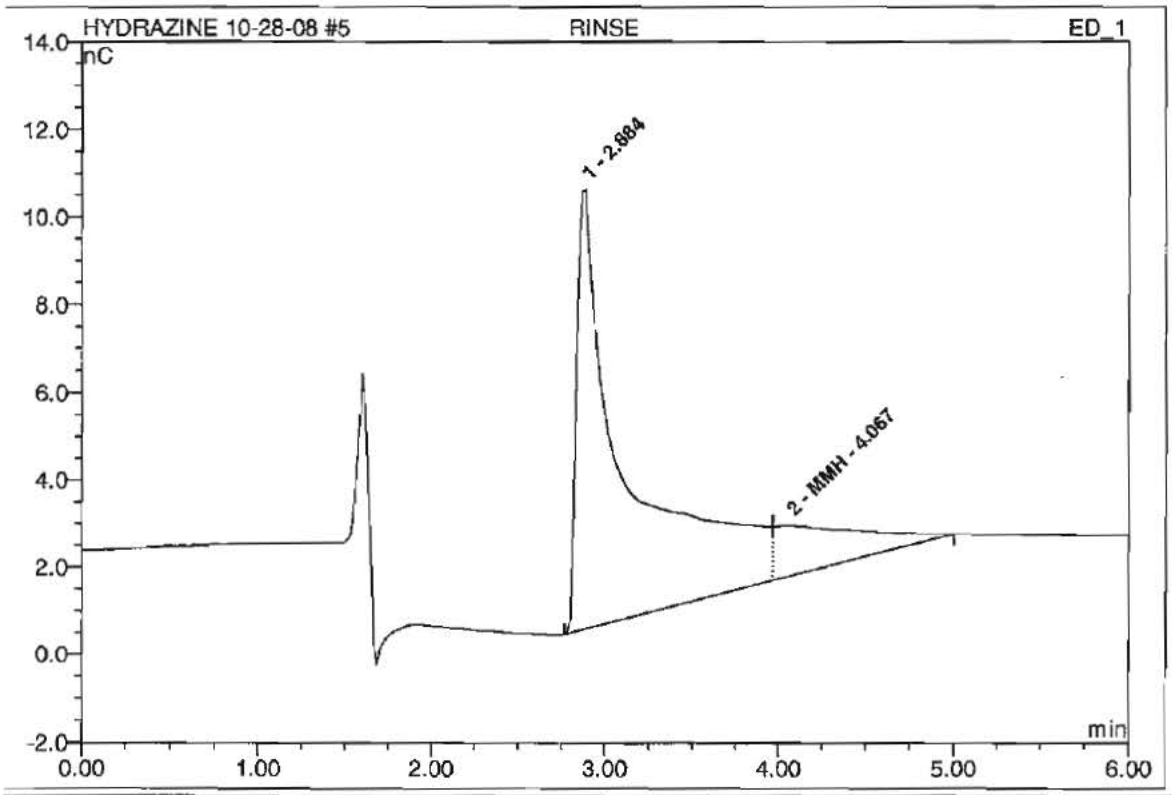
Sample Name:	**RT CHECK**	*Injection Volume:*	**200.0**
Vial Number:	**6**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 16:49**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.85	n.a.	0.005	0.001	0.06	n.a.	BMB
2	3.43	Hydrazine	2.777	0.427	42.78	102.34	BM
3	3.98	MMH	1.939	0.354	35.44	97.91	M
4	4.53	UDMH	1.088	0.217	21.73	184.92	MB
Total:			5.809	0.99890	100.00	385.164	

5 RINSE

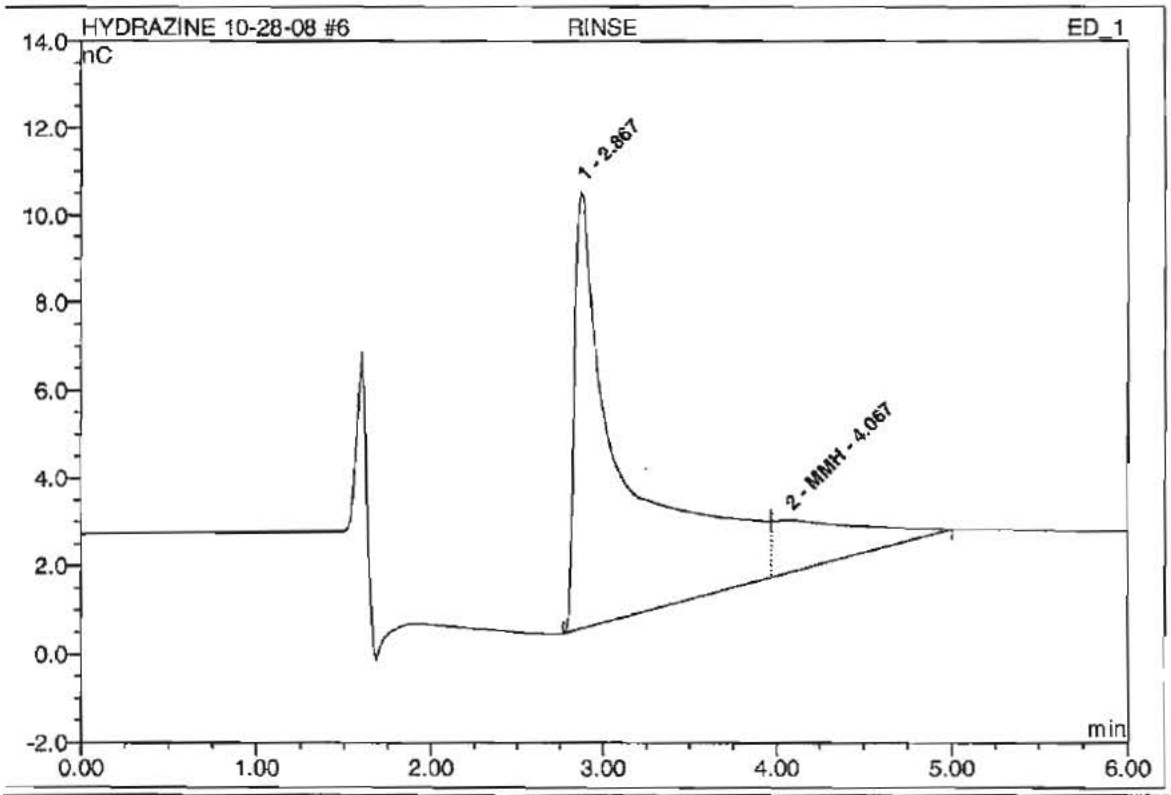
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**47**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 16:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.88	n.a.	10.052	3.437	84.42	n.a.	BM
2	4.07	MMH	1.156	0.634	15.58	175.37	MB
Total:			11.207	4.07080	100.00	175.375	

6 RINSE

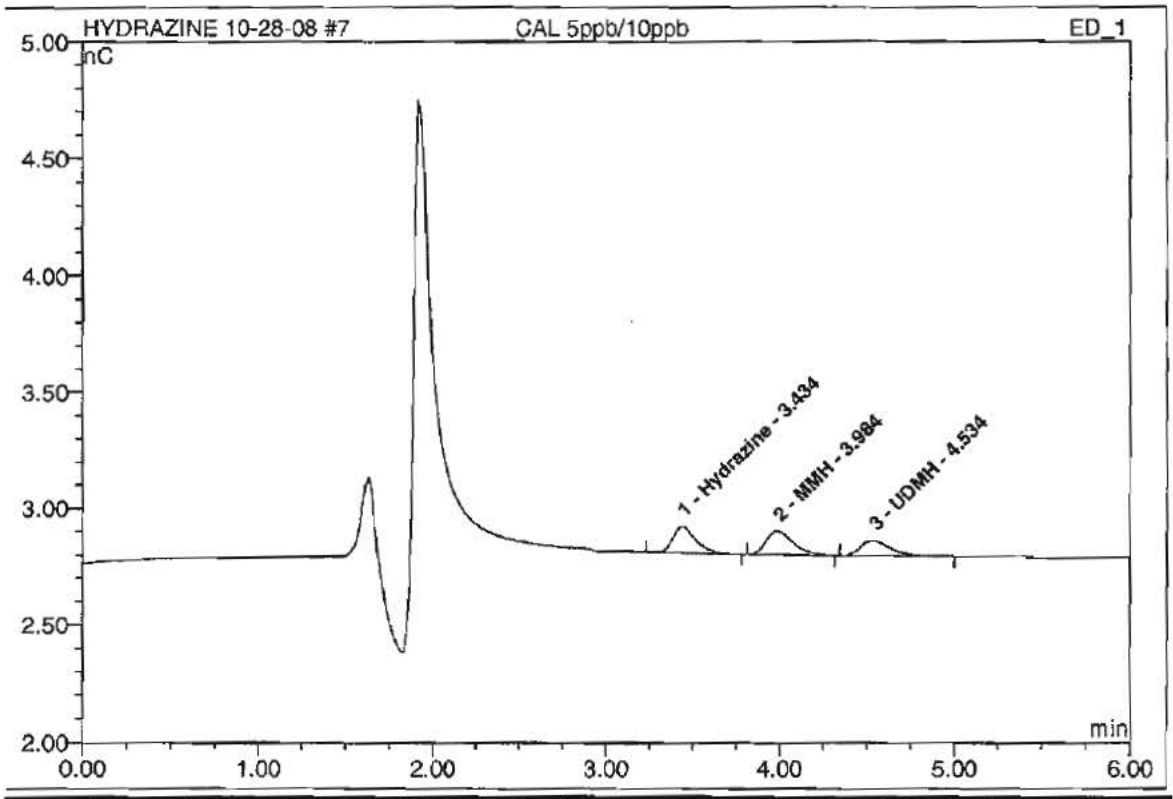
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**48**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 17:07**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.960	3.476	84.15	n.a.	BM
2	4.07	MMH	1.193	0.655	15.85	181.02	MB
Total:			11.153	4.13082	100.00	181.017	

7 CAL 5ppb/10ppb

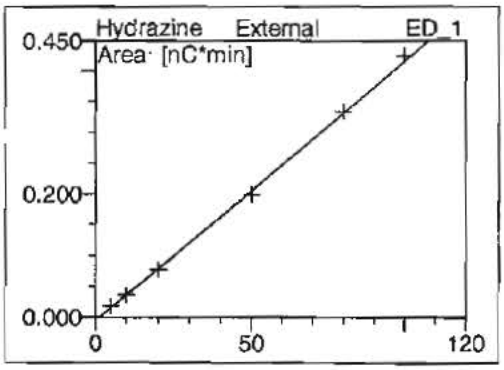
Sample Name:	**CAL 5ppb/10ppb**	*Injection Volume:*	**200.0**
Vial Number:	**1**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 17:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**

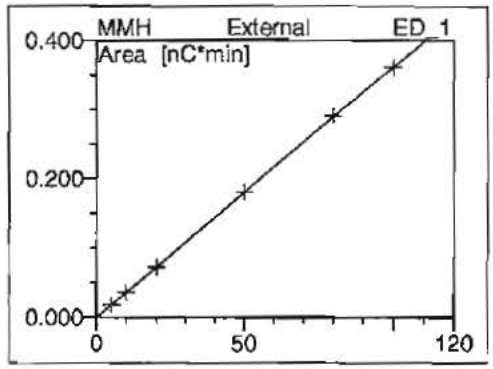


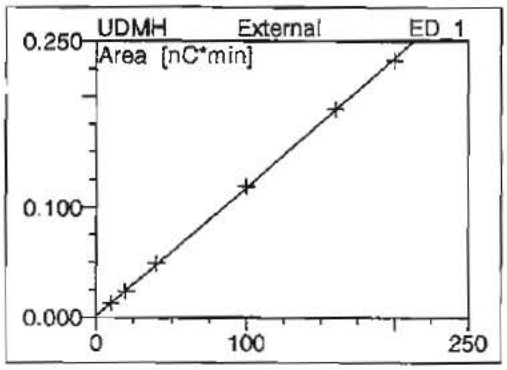
No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.43	Hydrazine	0.114	0.017	35.90	5.34	BMB
2	3.98	MMH	0.100	0.018	37.62	5.10	BMB
3	4.53	UDMH	0.064	0.013	26.47	9.91	BMB
Total:			0.278	0.04863	100.00	20.356	

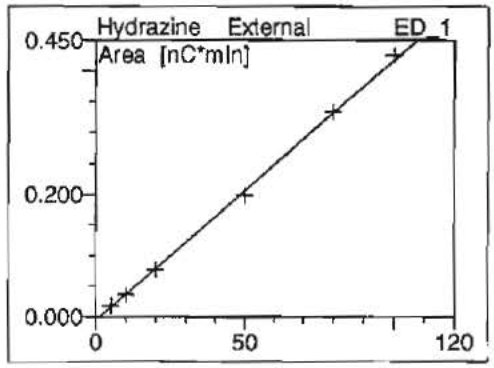
7 CAL 5ppb/10ppb

Sample Name:	**CAL 5ppb/10ppb**	*Injection Volume:*	**####**
Vial Number:	**1**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**####**
Recording Time:	**##########**	*Sample Weight:*	**####**
Run Time (min):	**6.00**	*Sample Amount:*	**####**





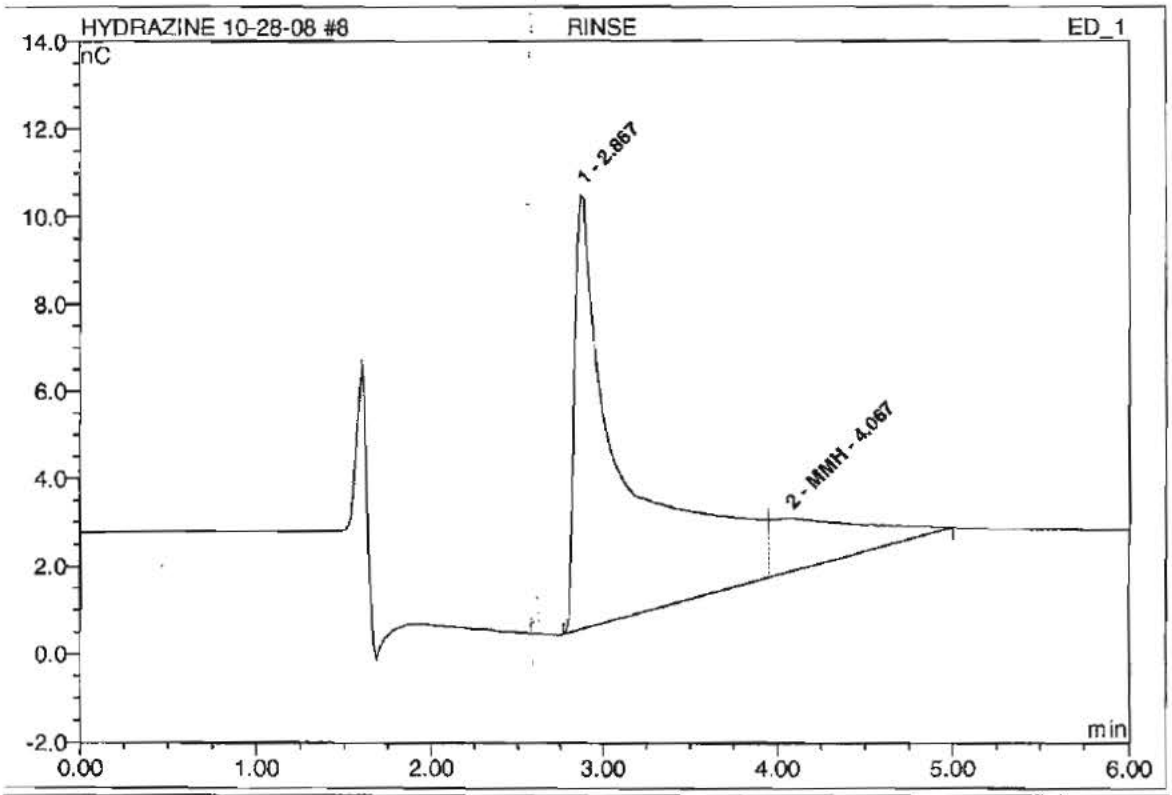




No.	Time (detec min	Peak Name	al.Typ	oints	Corr.Coeff. %	
1	3.43	Hydrazine	XLOff	6	99.9593	
2	3.98	MMH	XLOff	6	99.9972	
3	4.53	UDMH	XLOff	6	99.9887	
Average:					99.9818	#DIV/0! ##### ####

8 RINSE

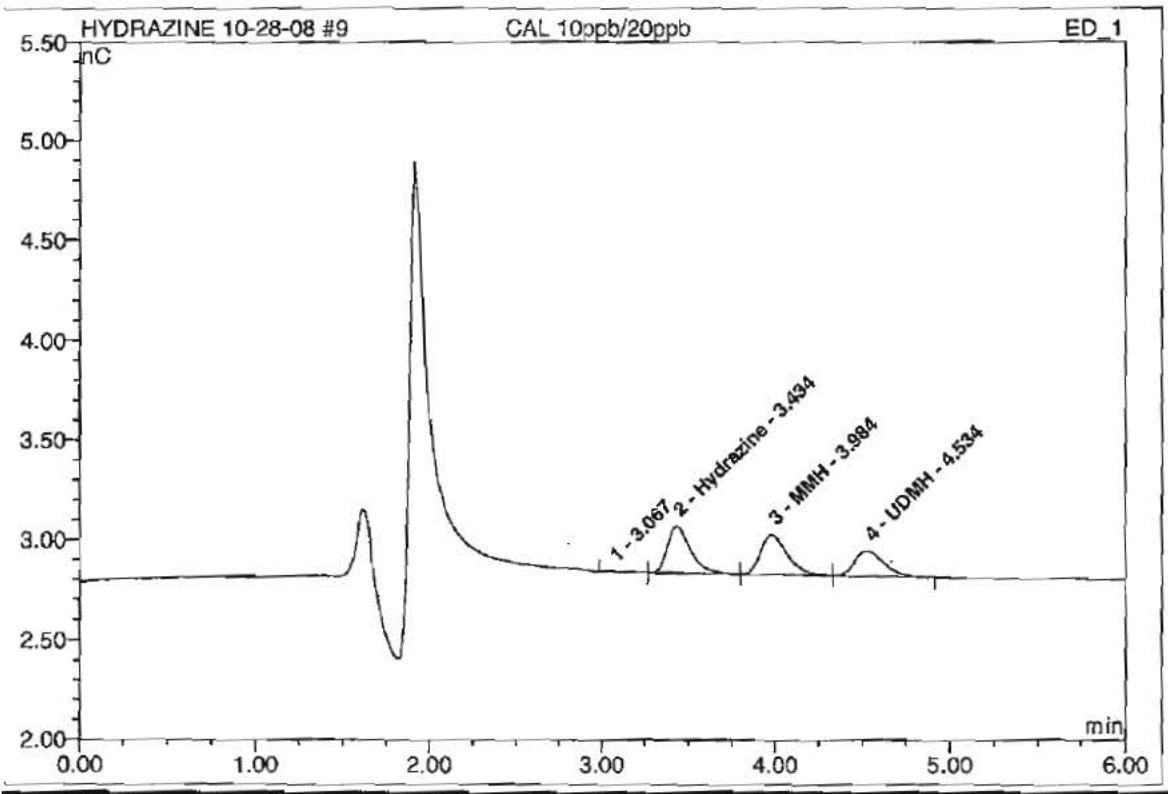
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**49**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 17:24**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.913	3.457	83.42	n.a.	BM
2	4.07	MMH	1.214	0.687	16.58	190.02	MB
Total:			11.127	4.14414	100.00	190.020	

9 CAL 10ppb/20ppb

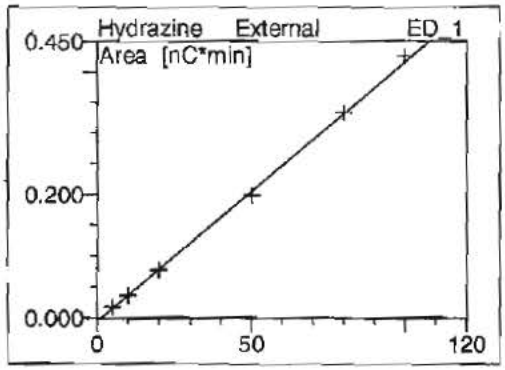
Sample Name:	**CAL 10ppb/20ppb**	*Injection Volume:*	**200.0**
Vial Number:	**2**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 17:33**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**

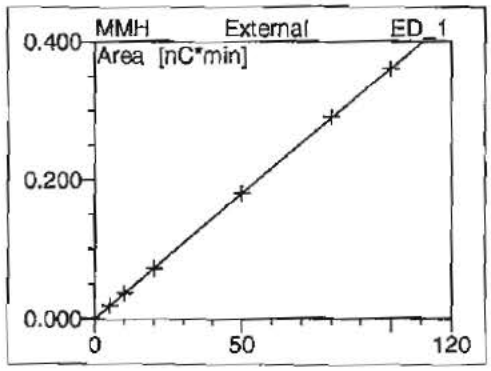


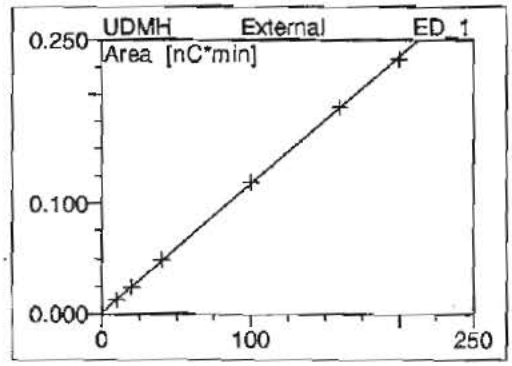
No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.07	n.a.	0.002	0.000	0.31	n.a.	BM
2	3.43	Hydrazine	0.235	0.036	37.53	9.70	M
3	3.98	MMH	0.198	0.035	36.96	9.82	M
4	4.53	UDMH	0.125	0.024	25.19	19.54	MB
Total:			0.560	0.09566	100.00	39.061	

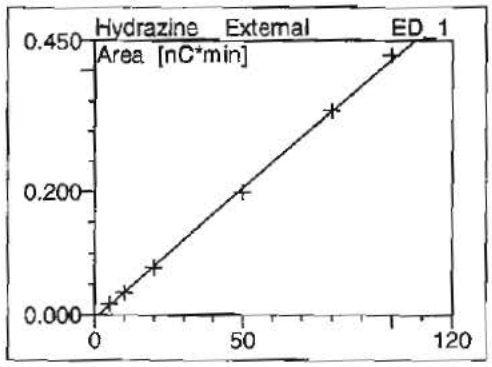
9 CAL 10ppb/20ppb

Sample Name:	**CAL 10ppb/20ppb**	*Injection Volume:*	**####**
Vial Number:	**2**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**####**
Recording Time:	**##########**	*Sample Weight:*	**####**
Run Time (min):	**6.00**	*Sample Amount:*	**####**





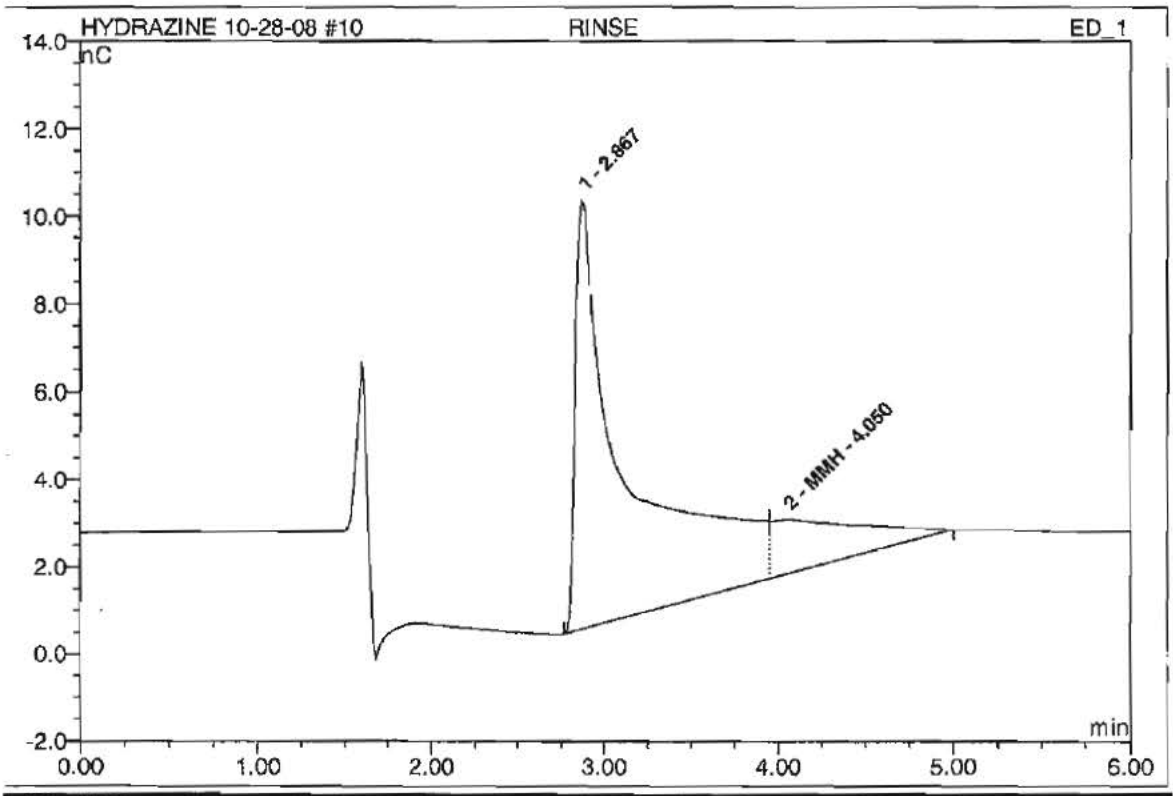




No.	Time (detec min	Peak Name	al.Typ	Points	Corr.Coeff. %	
1	3.07	n.a.	n.a.	n.a.	n.a.	
2	3.43	Hydrazine	XLOff	6	99.9593	
3	3.98	MMH	XLOff	6	99.9972	
4	4.53	UDMH	XLOff	6	99.9887	
Average:					99.9818	#DIV/0! ##### ####

10 RINSE

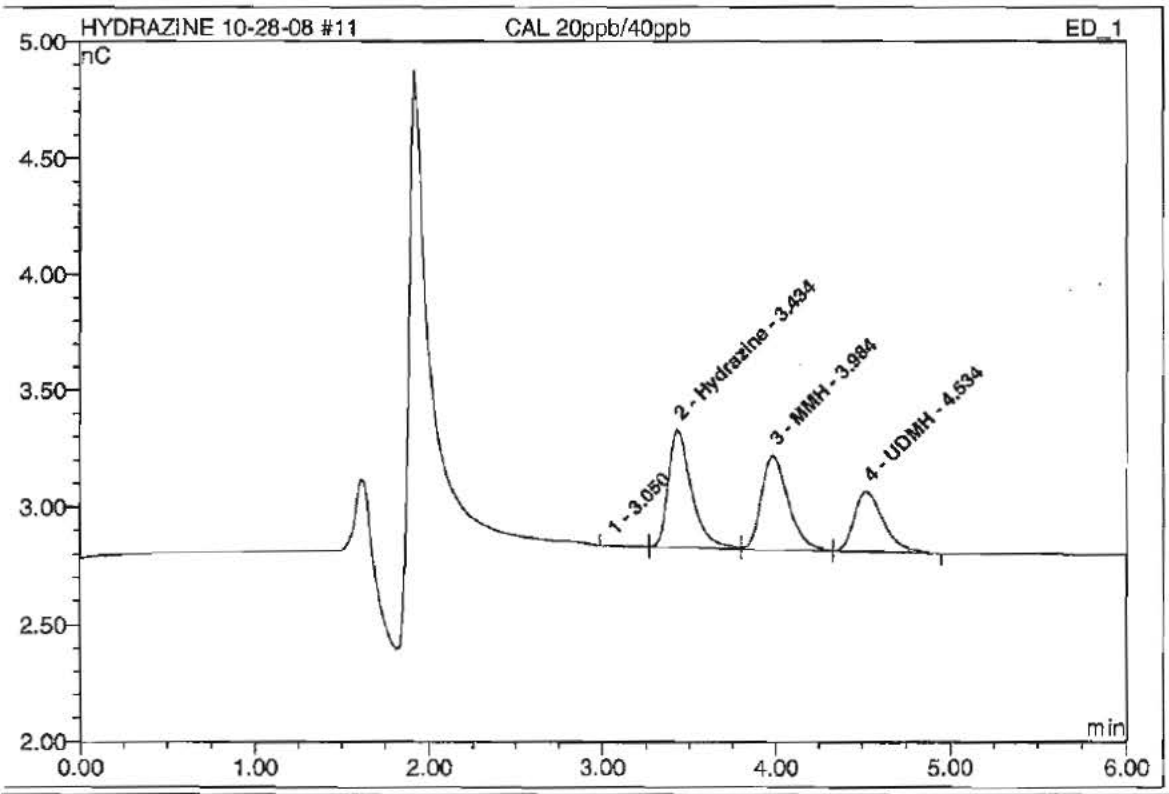
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**45**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 17:41**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.781	3.433	83.35	n.a.	BM
2	4.05	MMH	1.231	0.686	16.65	189.68	MB
Total:			11.011	4.11844	100.00	189.685	

11 CAL 20ppb/40ppb

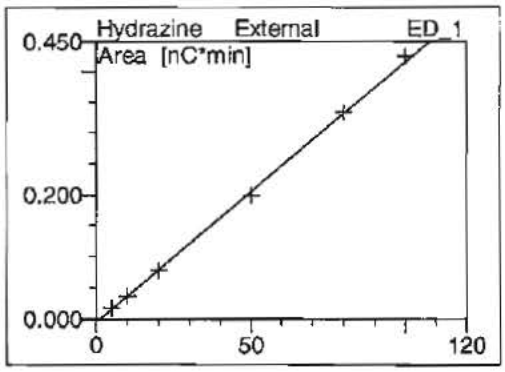
Sample Name:	**CAL 20ppb/40ppb**	*Injection Volume:*	**200.0**
Vial Number:	**3**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 17:50**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**

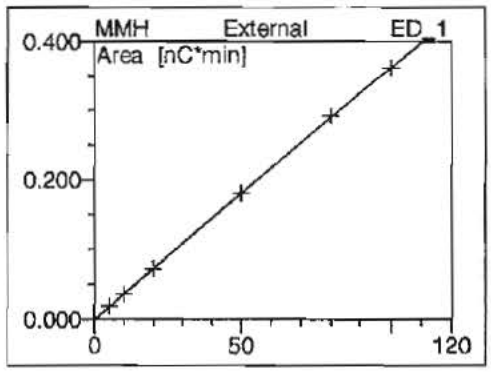


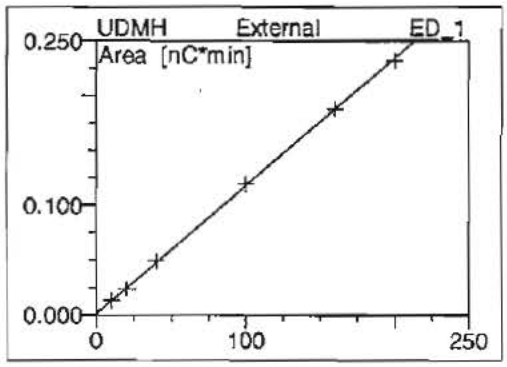
No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.05	n.a.	0.002	0.001	0.28	n.a.	BM
2	3.43	Hydrazine	0.500	0.077	38.81	19.48	M
3	3.98	MMH	0.401	0.072	36.13	19.92	M
4	4.53	UDMH	0.253	0.049	24.78	41.14	MB
Total:			1.156	0.19896	100.00	80.543	

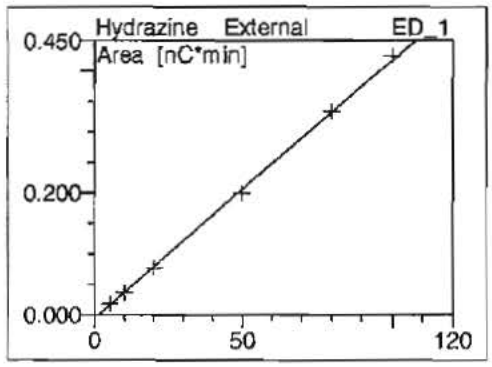
11 CAL 20ppb/40ppb

Sample Name:	**CAL 20ppb/40ppb**	*Injection Volume:*	**####**
Vial Number:	**3**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**####**
Recording Time:	**##########**	*Sample Weight:*	**####**
Run Time (min):	**6.00**	*Sample Amount:*	**####**





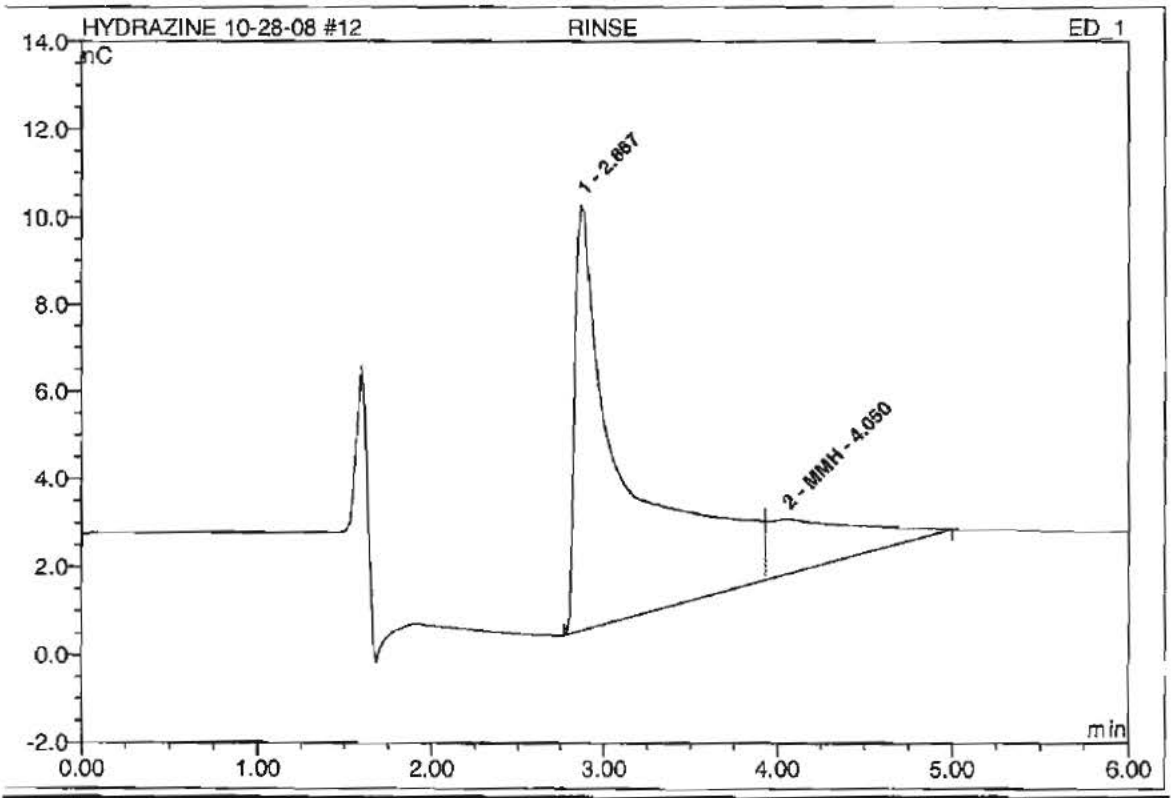




No.	Time (detec min	Peak Name	al.Typ	Points	Corr.Coeff. %	
1	3.05	n.a.	n.a.	n.a.	n.a.	
2	3.43	Hydrazine	XLOff	6	99.9593	
3	3.98	MMH	XLOff	6	99.9972	
4	4.53	UDMH	XLOff	6	99.9887	
Average:					99.9818	#DIV/0! ##### ####

12 RINSE

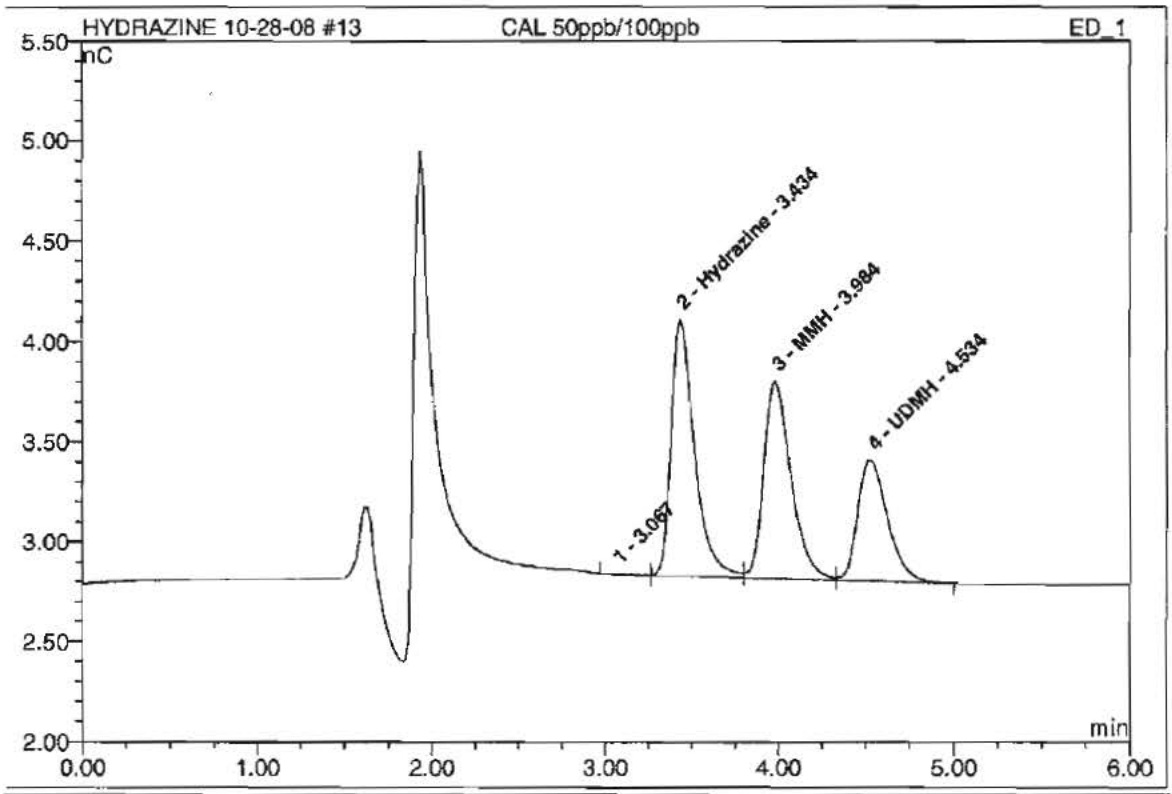
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**46**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 17:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.712	3.392	82.72	n.a.	BM
2	4.05	MMH	1.233	0.708	17.28	195.88	MB
Total:			10.944	4.10026	100.00	195.883	

13 CAL 50ppb/100ppb

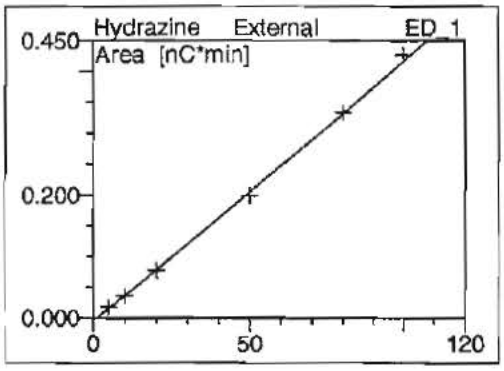
Sample Name:	**CAL 50ppb/100ppb**	*Injection Volume:*	**200.0**
Vial Number:	**4**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 18:07**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**

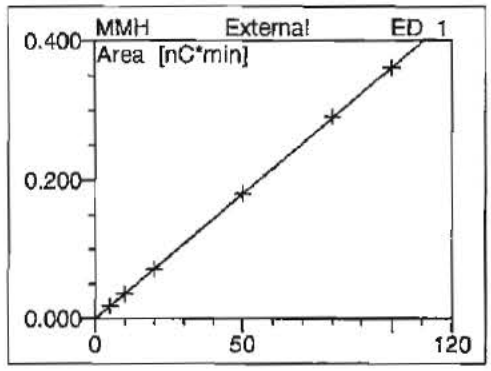


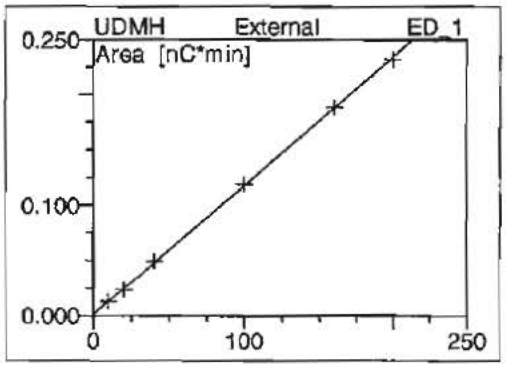
No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.07	n.a.	0.003	0.001	0.14	n.a.	BM
2	3.43	Hydrazine	1.281	0.199	39.87	48.30	M
3	3.98	MMH	0.988	0.180	36.08	49.82	M
4	4.53	UDMH	0.606	0.119	23.91	101.15	MB
Total:			2.878	0.49904	100.00	199.269	

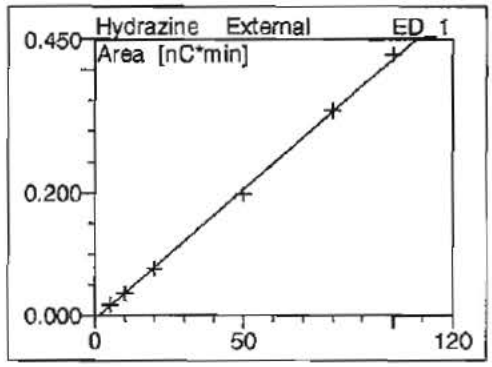
13 CAL 50ppb/100ppb

Sample Name:	**CAL 50ppb/100ppb**	*Injection Volume:*	**####**
Vial Number:	**4**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**####**
Recording Time:	**##########**	*Sample Weight:*	**####**
Run Time (min):	**6.00**	*Sample Amount:*	**####**





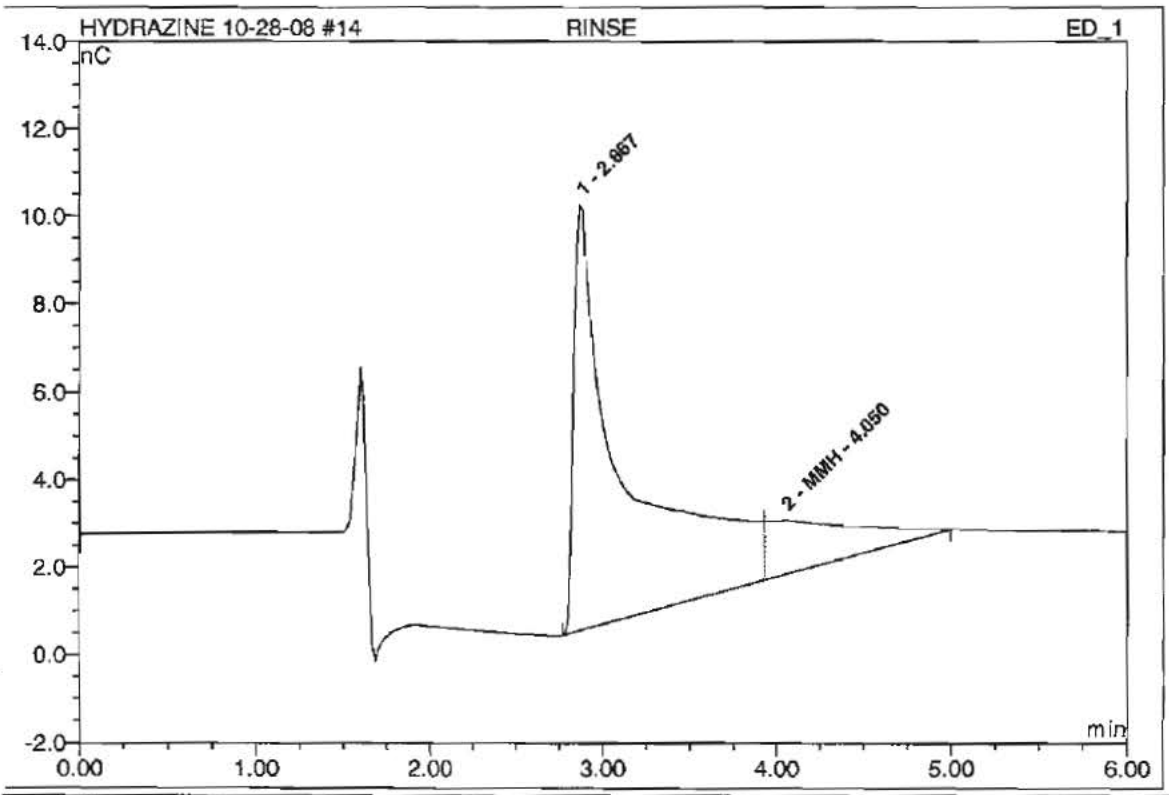




No.	Time (detec min	Peak Name	al.Typ	oints	Corr.Coeff. %	
1	3.07	n.a.	n.a.	n.a.	n.a.	
2	3.43	Hydrazine	XLOff	6	99.9593	
3	3.98	MMH	XLOff	6	99.9972	
4	4.53	UDMH	XLOff	6	99.9887	
Average:					99.9818	#DIV/0! ##### ####

14 RINSE

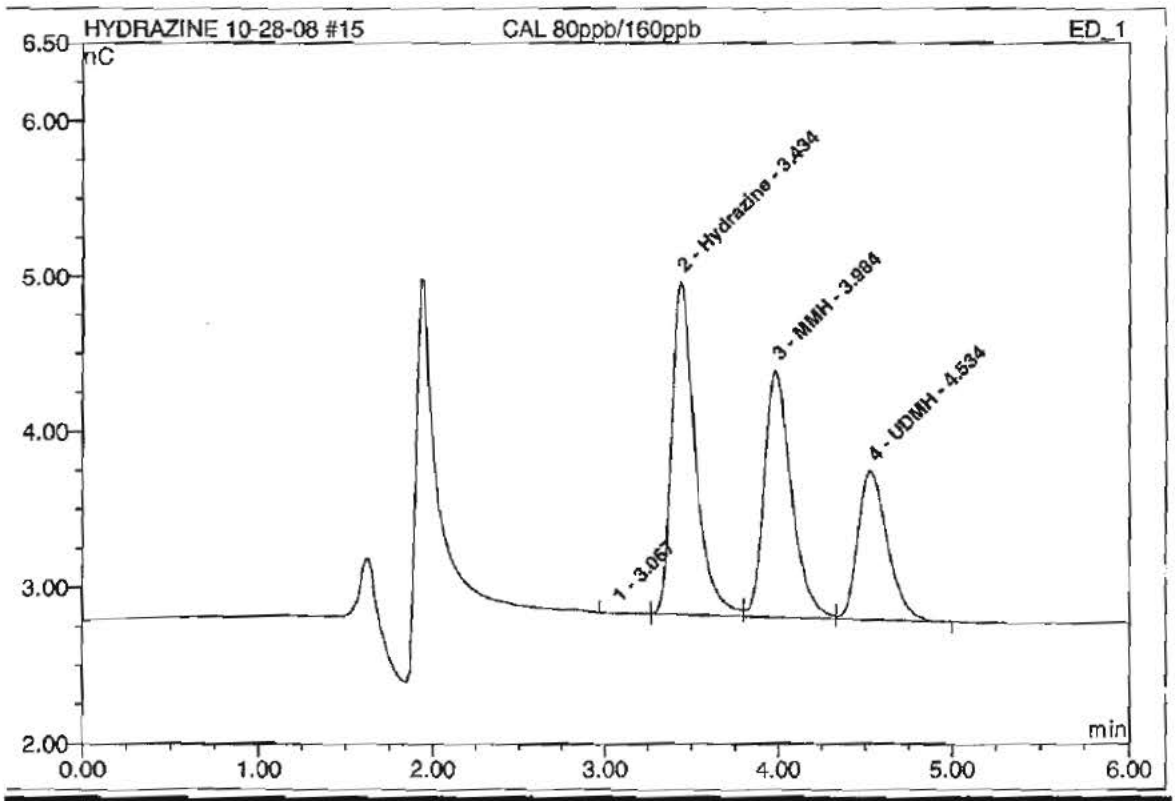
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**47**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 18:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.675	3.380	82.64	n.a.	BM
2	4.05	MMH	1.235	0.710	17.36	196.29	MB
Total:			10.910	4.08963	100.00	196.285	

15 CAL 80ppb/160ppb

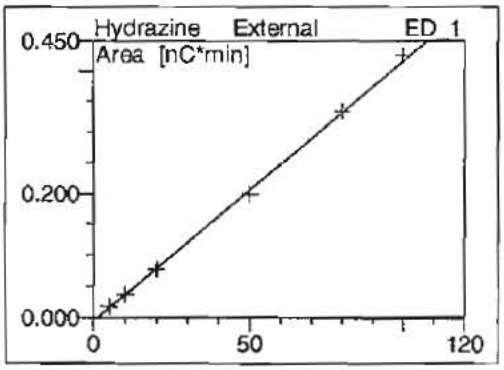
Sample Name:	**CAL 80ppb/160ppb**	*Injection Volume:*	**200.0**
Vial Number:	**5**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 18:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**

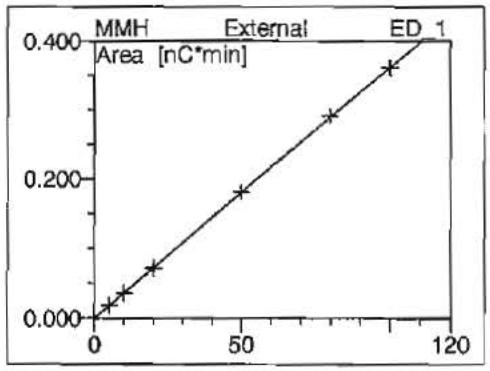


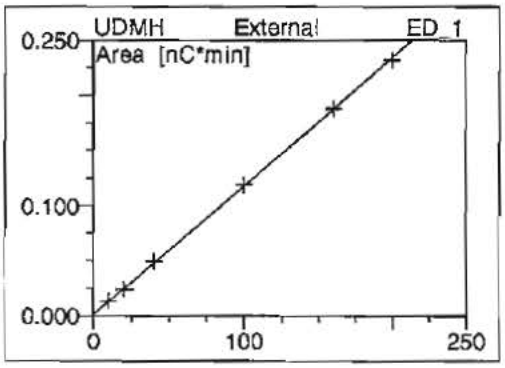
No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.07	n.a.	0.004	0.001	0.14	n.a.	BM
2	3.43	Hydrazine	2.143	0.334	41.01	80.26	M
3	3.98	MMH	1.590	0.291	35.73	80.50	M
4	4.53	UDMH	0.952	0.188	23.12	160.26	MB
Total:			4.688	0.81442	100.00	321.015	

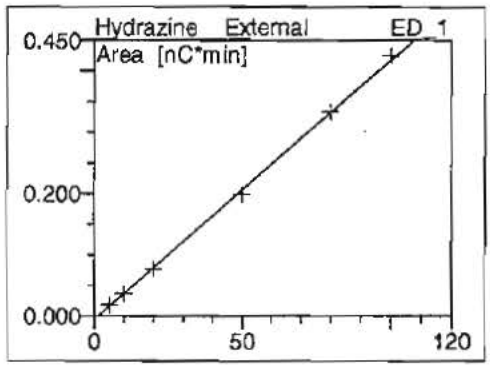
15 CAL 80ppb/160ppb

Sample Name:	**CAL 80ppb/160ppb**	*Injection Volume:*	**####**
Vial Number:	**5**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**####**
Recording Time:	**##########**	*Sample Weight:*	**####**
Run Time (min):	**6.00**	*Sample Amount:*	**####**





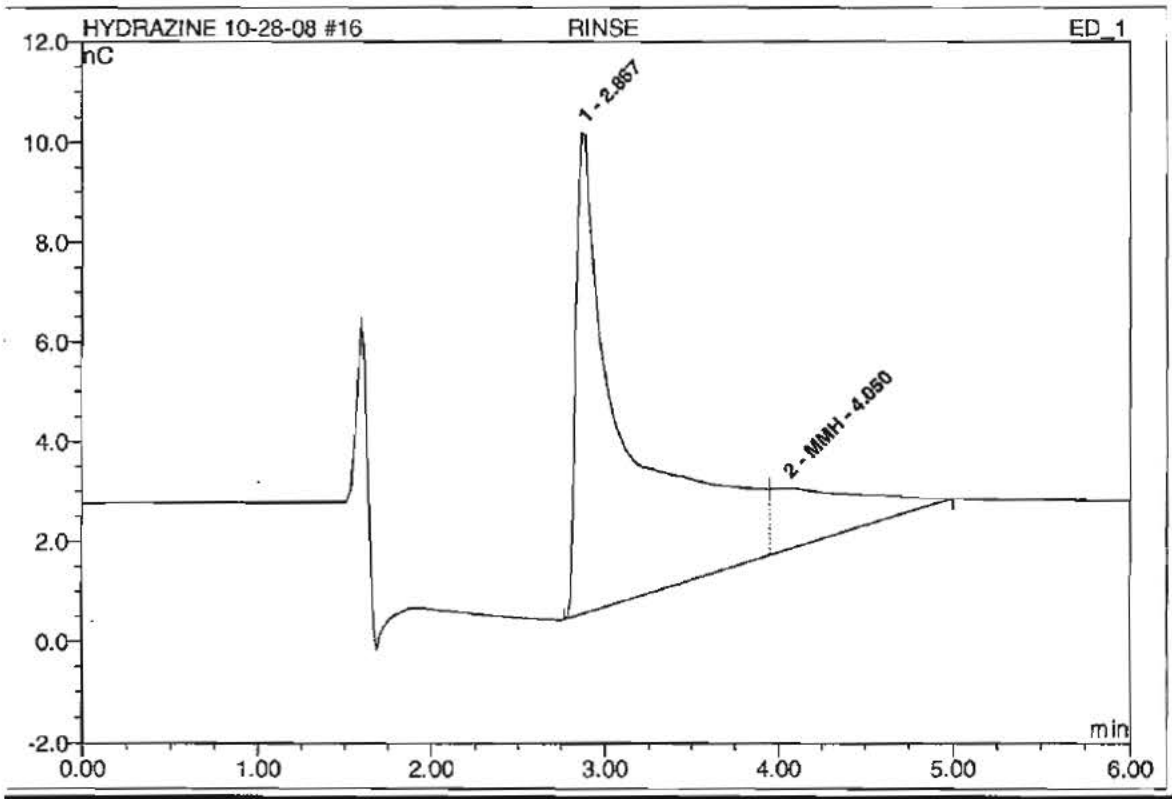




No.	Time (detec min	Peak Name	al.Typ	Points	Corr.Coeff. %	
1	3.07	n.a.	n.a.	n.a.	n.a.	
2	3.43	Hydrazine	XLOff	6	99.9593	
3	3.98	MMH	XLOff	6	99.9972	
4	4.53	UDMH	XLOff	6	99.9887	
Average:					99.9818	#DIV/0! ##### ####

16 RINSE

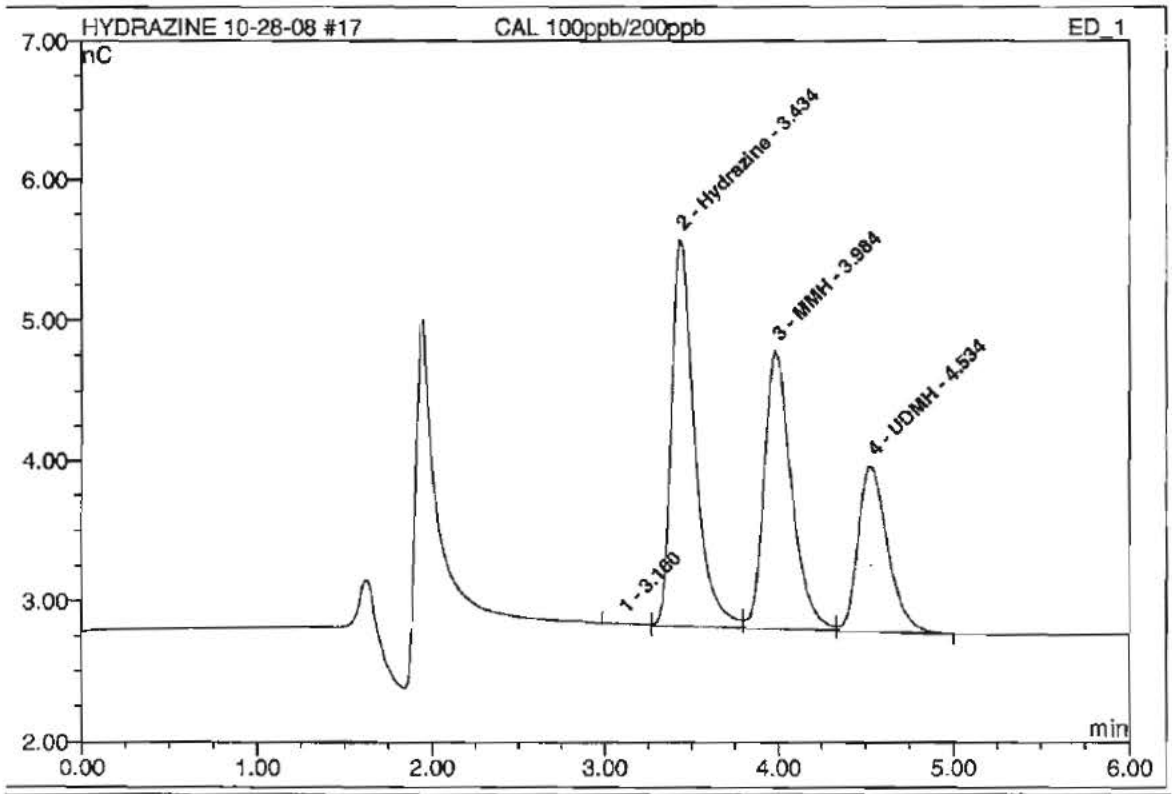
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**48**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 18:33**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.630	3.395	83.14	n.a.	BM
2	4.05	MMH	1.235	0.689	16.86	190.40	MB
Total:			10.865	4.08338	100.00	190.403	

17 CAL 100ppb/200ppb

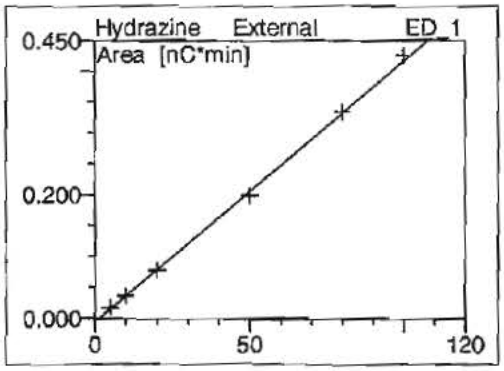
Sample Name:	**CAL 100ppb/200ppb**	*Injection Volume:*	**200.0**
Vial Number:	**6**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 18:42**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**

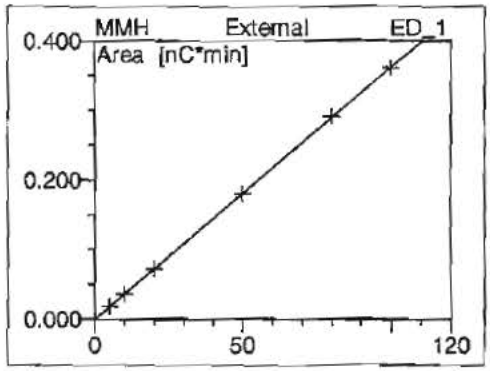


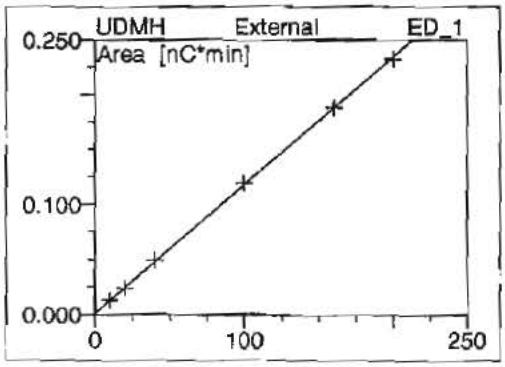
No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.10	n.a.	0.006	0.001	0.13	n.a.	BM
2	3.43	Hydrazine	2.749	0.426	41.72	101.93	M
3	3.98	MMH	1.983	0.361	35.38	99.84	M
4	4.53	UDMH	1.180	0.232	22.77	197.99	MB
Total:			5.918	1.02014	100.00	399.756	

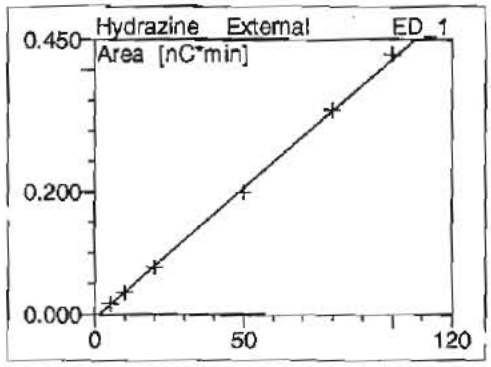
17 CAL 100ppb/200ppb

Sample Name:	**CAL 100ppb/200ppb**	*Injection Volume:*	**####**
Vial Number:	**6**	*Channel:*	**ED_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**####**
Recording Time:	**##########**	*Sample Weight:*	**####**
Run Time (min):	**6.00**	*Sample Amount:*	**####**





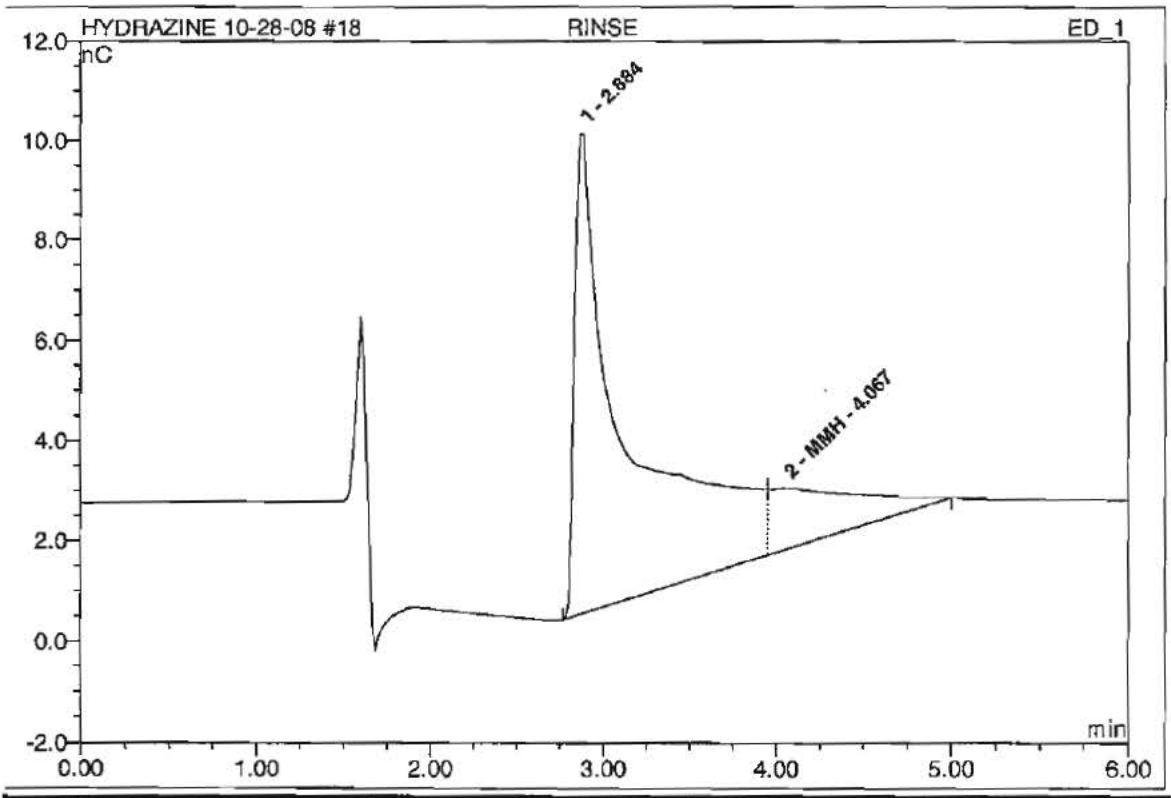




No.	Time (detec	Peak Name	al.Typ	Points	Corr.Coeff.	
	min				%	
1	3.10	n.a.	n.a.	n.a.	n.a.	
2	3.43	Hydrazine	XLOff	6	99.9593	
3	3.98	MMH	XLOff	6	99.9972	
4	4.53	UDMH	XLOff	6	99.9887	
Average:					99.9818	#DIV/0! ##### ####

18 RINSE

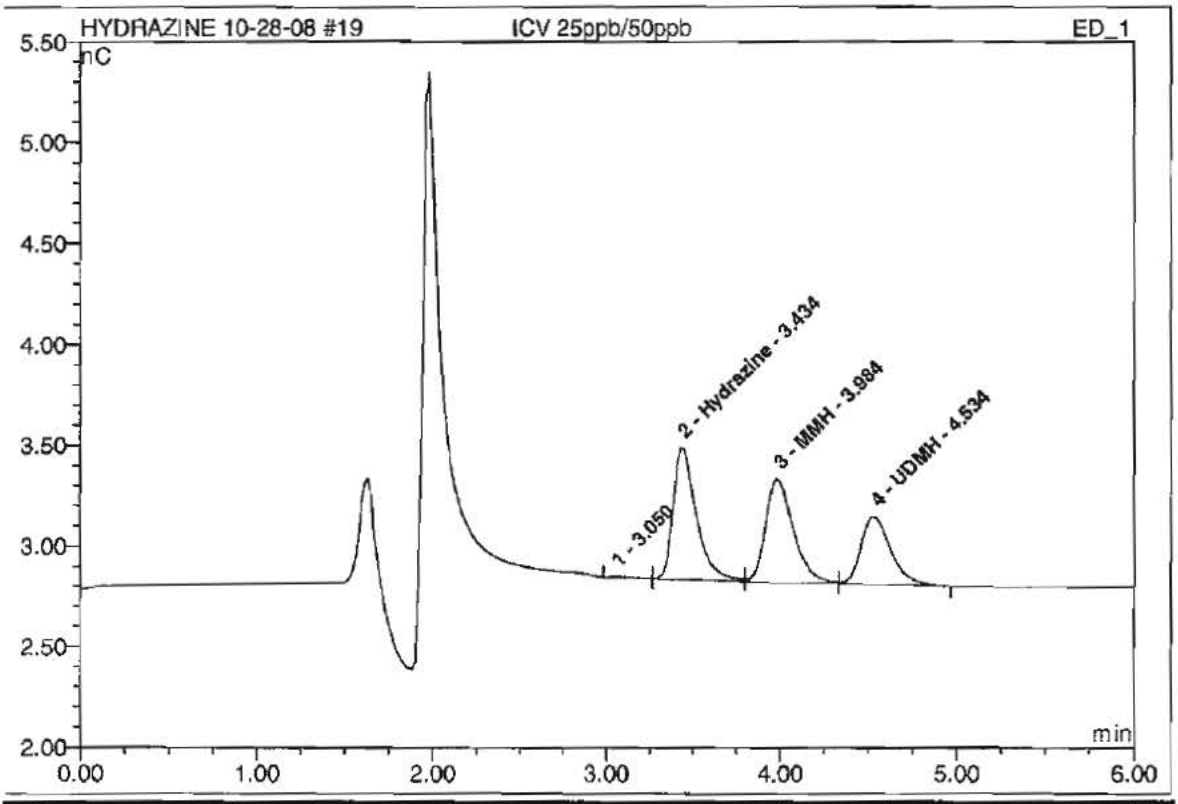
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**49**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 18:51**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.88	n.a.	9.576	3.385	83.13	n.a.	BM
2	4.07	MMH	1.212	0.687	16.87	189.91	MB
Total:			10.788	4.07138	100.00	189.910	

19 ICV 25ppb/50ppb

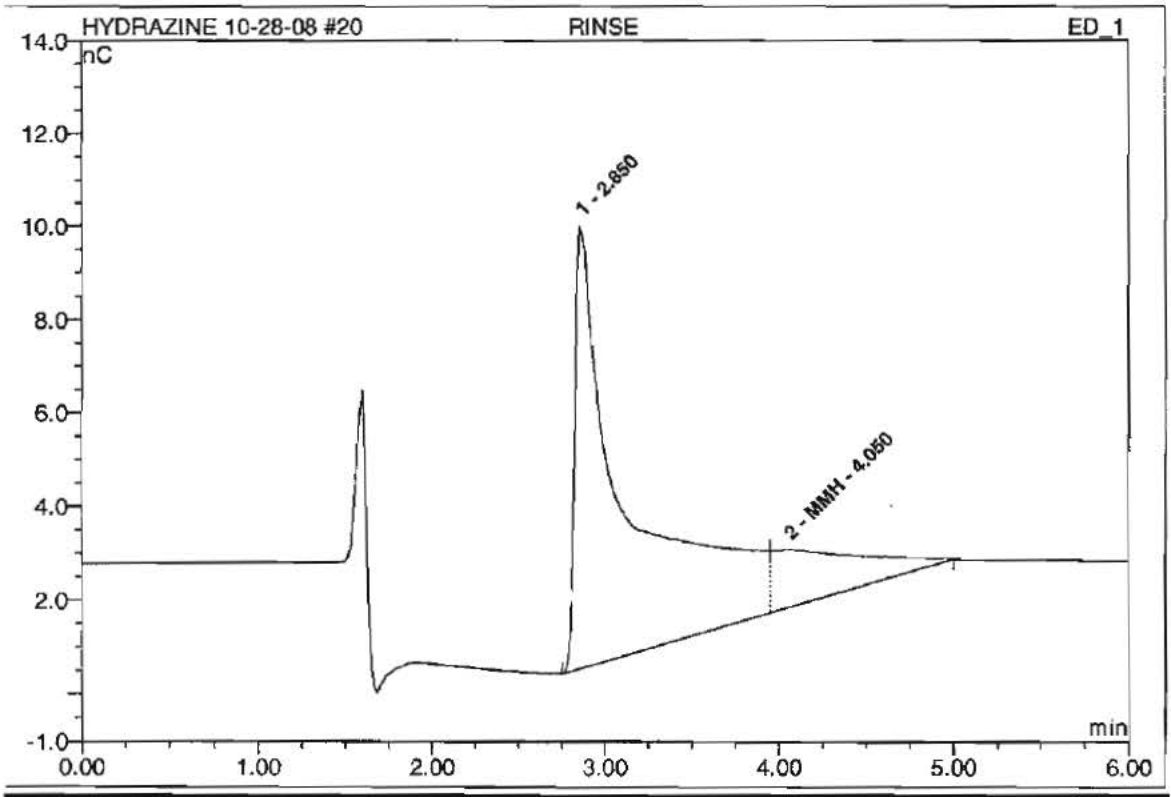
Sample Name:	**ICV 25ppb/50ppb**	*Injection Volume:*	**200.0**
Vial Number:	**7**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 18:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.05	n.a.	0.002	0.001	0.27	n.a.	BM
2	3.43	Hydrazine	0.652	0.100	38.55	24.81	M
3	3.98	MMH	0.510	0.093	35.88	25.71	M
4	4.53	UDMH	0.334	0.065	25.30	54.98	MB
Total:			1.498	0.25873	100.00	105.508	

20 RINSE

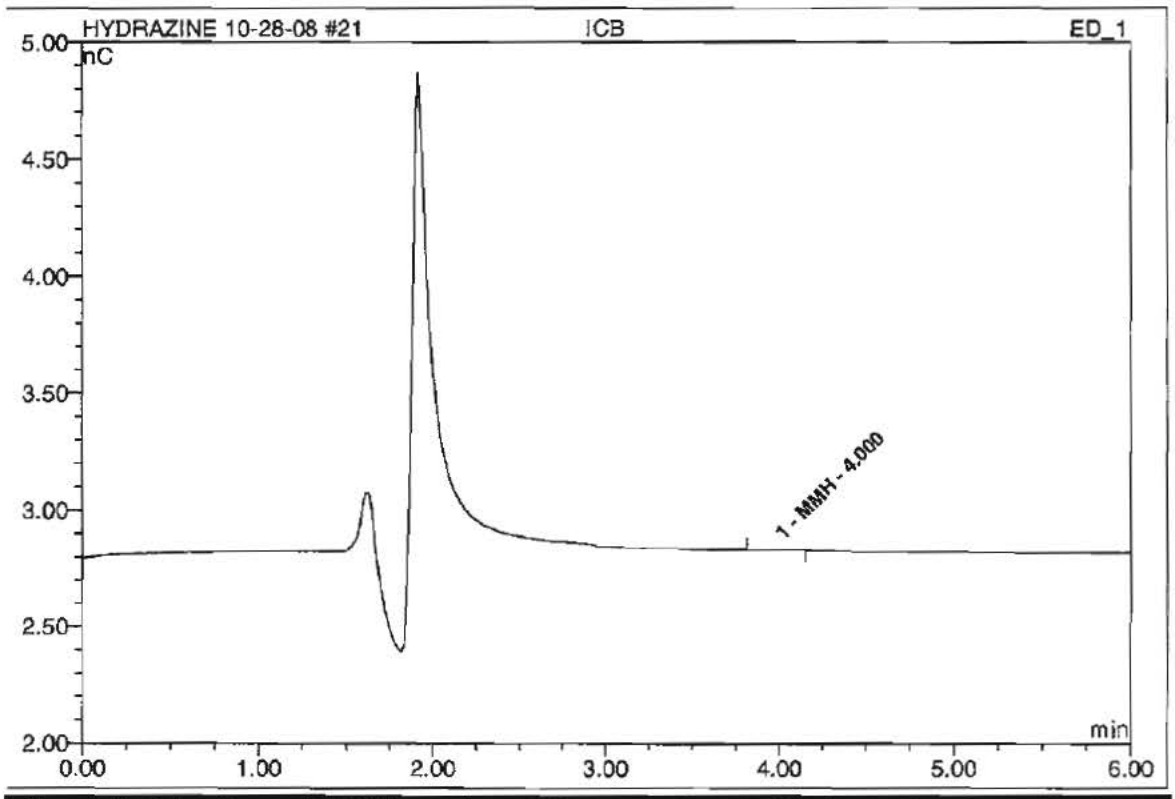
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**45**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 19:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.85	n.a.	9.451	3.370	83.08	n.a.	BM
2	4.05	MMH	1.229	0.686	16.92	189.79	MB
Total:			10.679	4.05597	100.00	189.785	

21 ICB

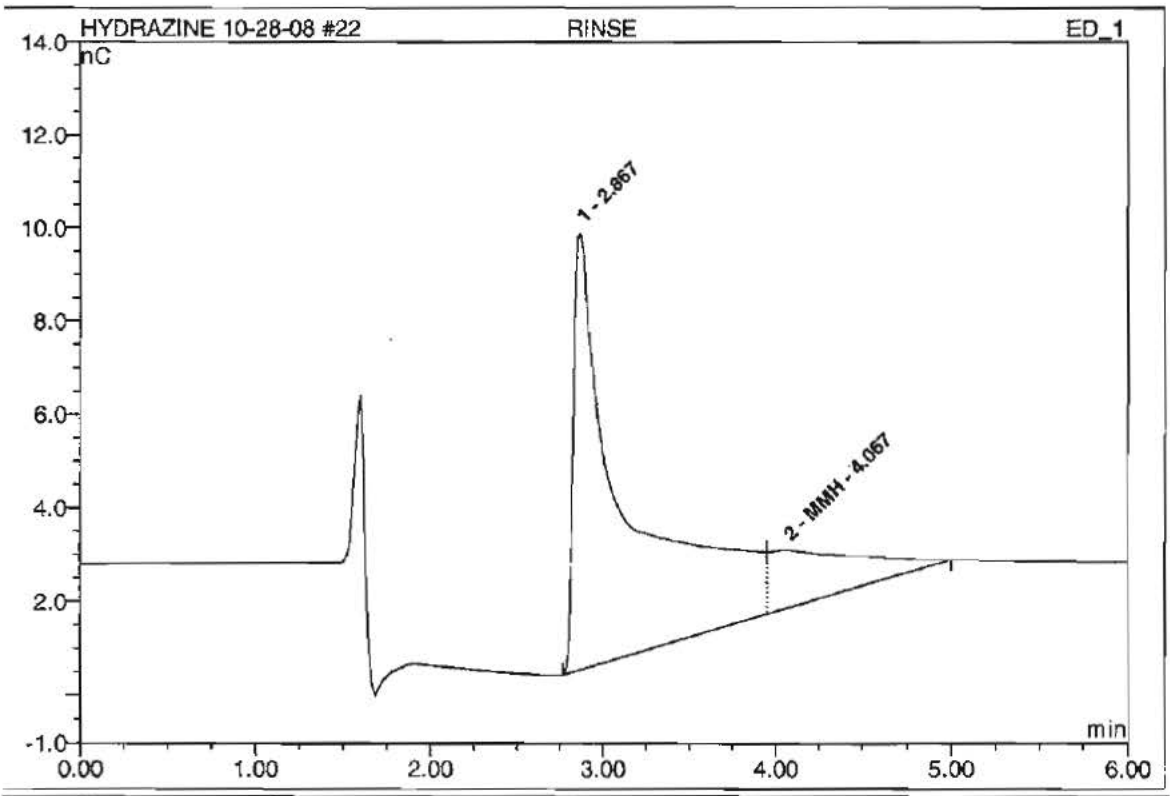
Sample Name:	**ICB**	*Injection Volume:*	**200.0**
Vial Number:	**8**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 19:17**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	4.00	MMH	0.002	0.000	100.00	0.14	BMB
Total:			0.002	0.00035	100.00	0.141	

22 RINSE

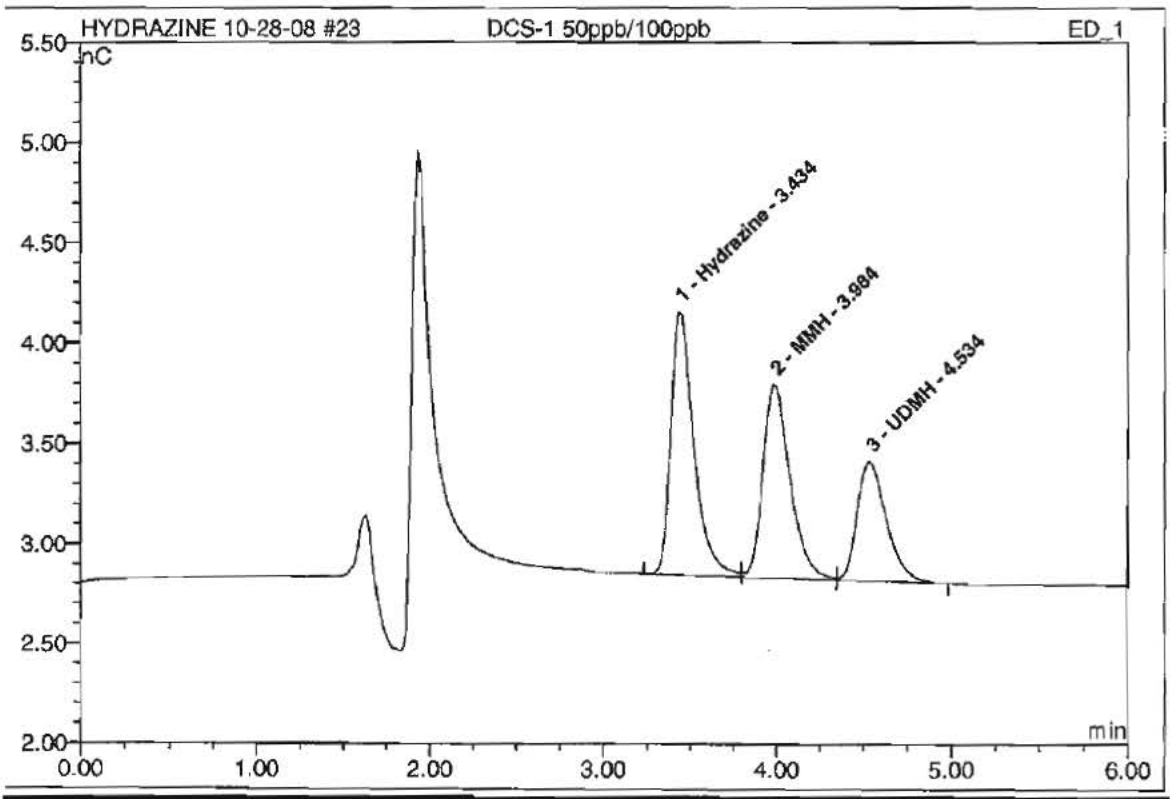
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**46**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 19:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.335	3.376	83.01	n.a.	BM
2	4.07	MMH	1.218	0.691	16.99	191.14	MB
Total:			10.553	4.06750	100.00	191.140	

23 DCS-1 50ppb/100ppb

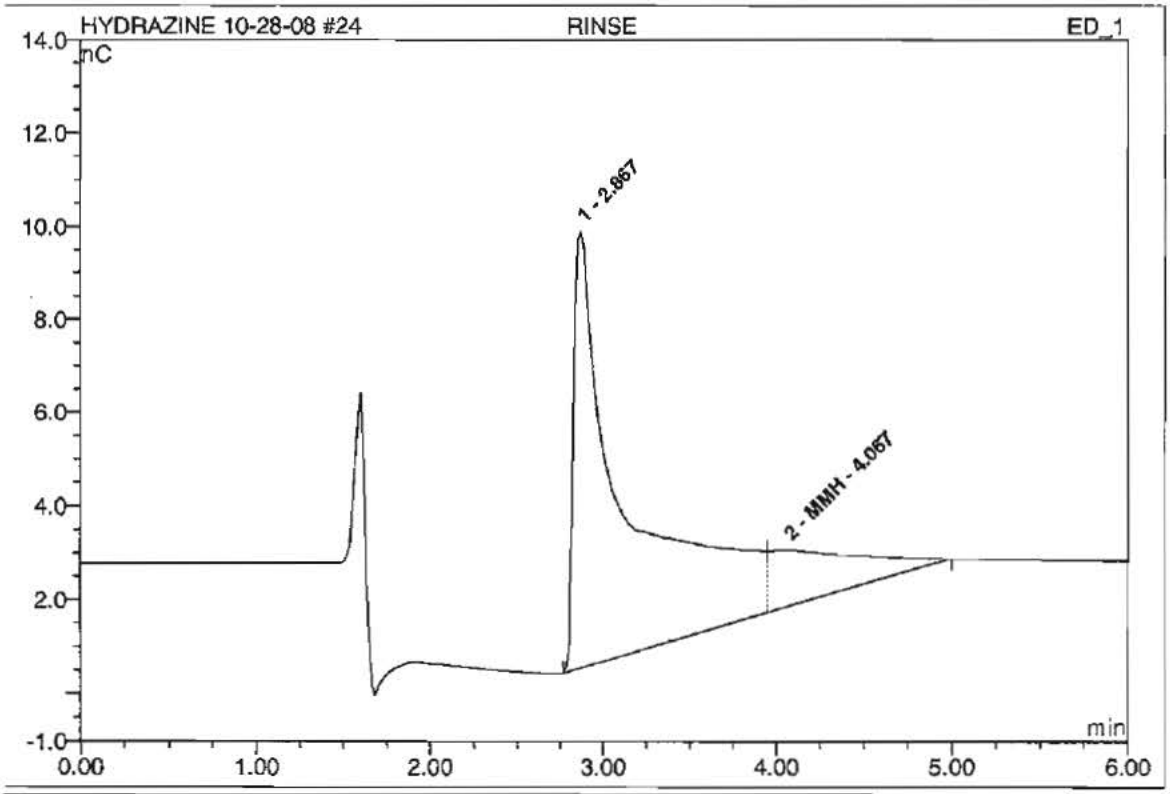
Sample Name:	**DCS-1 50ppb/100ppb**	*Injection Volume:*	**200.0**
Vial Number:	**9**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 19:34**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.43	Hydrazine	1.308	0.203	41.05	49.18	BM
2	3.98	MMH	0.963	0.175	35.39	48.37	M
3	4.53	UDMH	0.596	0.116	23.56	98.63	MB
Total:			2.867	0.49388	100.00	196.183	

24 RINSE

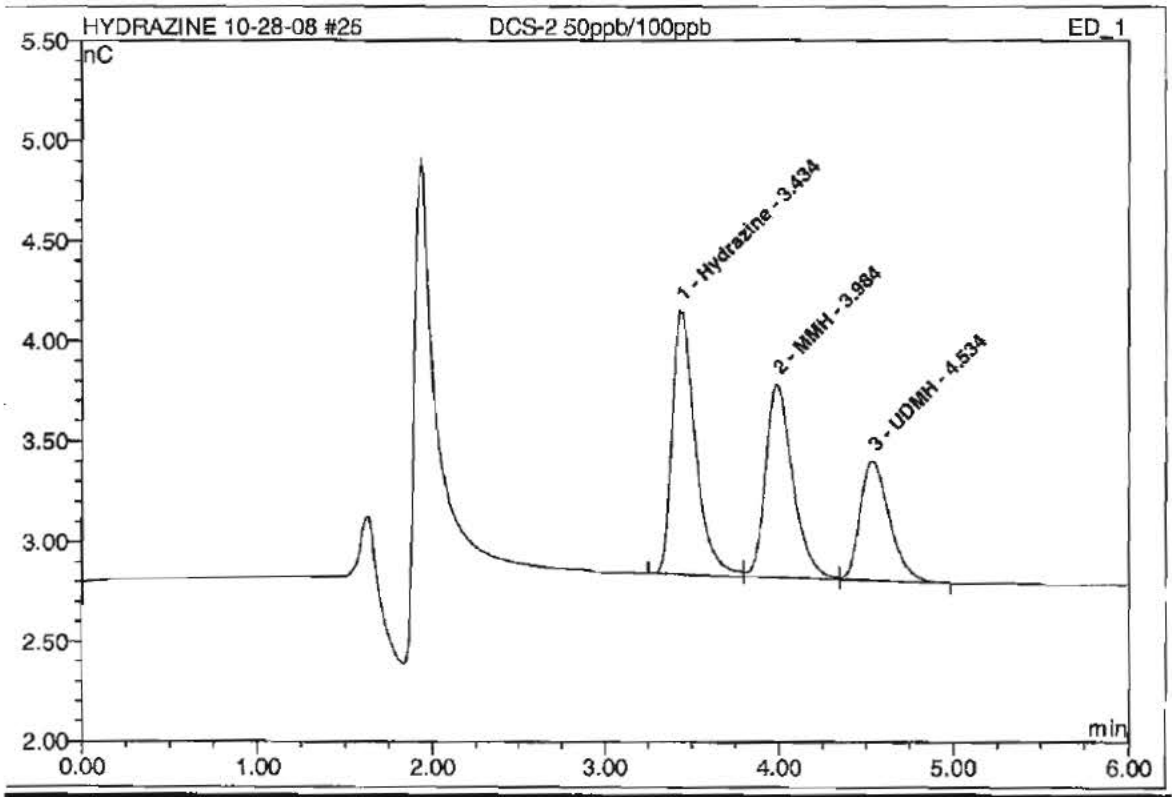
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**47**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 19:43**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.330	3.369	83.03	n.a.	BM
2	4.07	MMH	1.213	0.688	16.97	190.37	MB
Total:			10.542	4.05723	100.00	190.375	

25 DCS-2 50ppb/100ppb

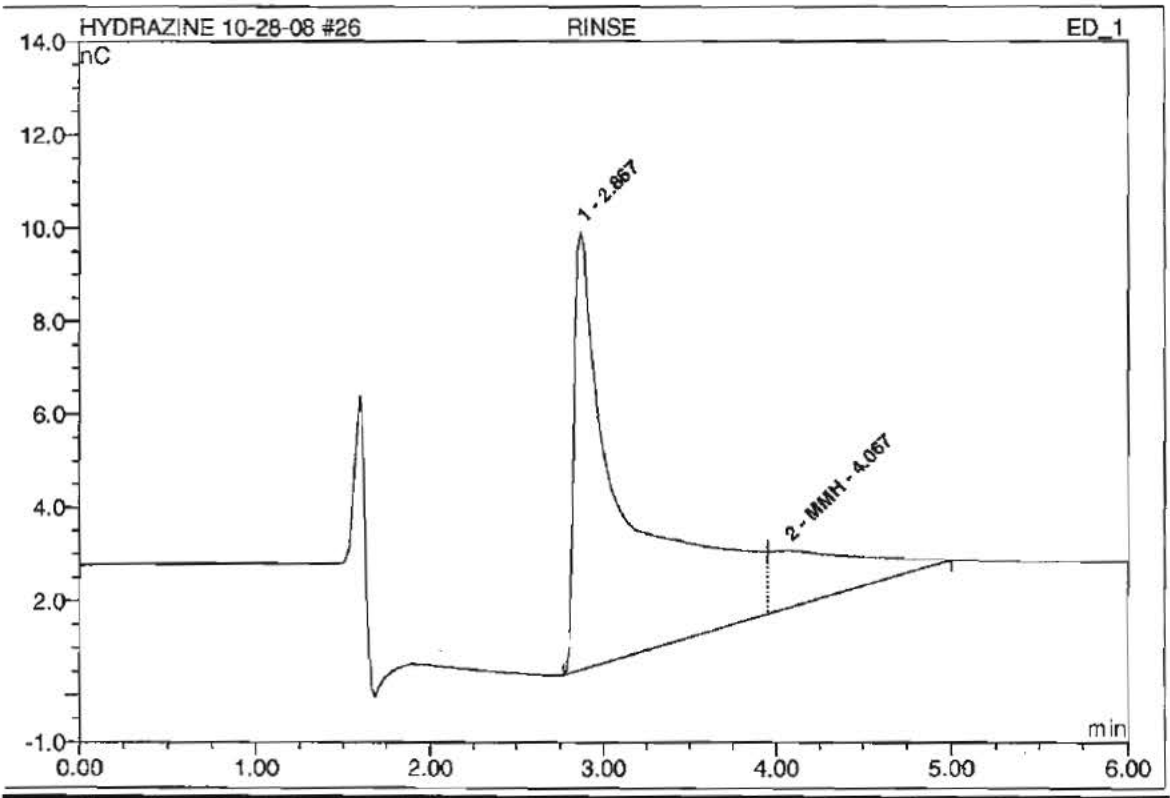
Sample Name:	**DCS-2 50ppb/100ppb**	*Injection Volume:*	**200.0**
Vial Number:	**10**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 19:51**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.43	Hydrazine	1.312	0.204	41.13	49.37	BM
2	3.98	MMH	0.965	0.175	35.37	48.43	M
3	4.53	UDMH	0.595	0.116	23.50	98.53	MB
Total:			2.872	0.49475	100.00	196.326	

26 RINSE

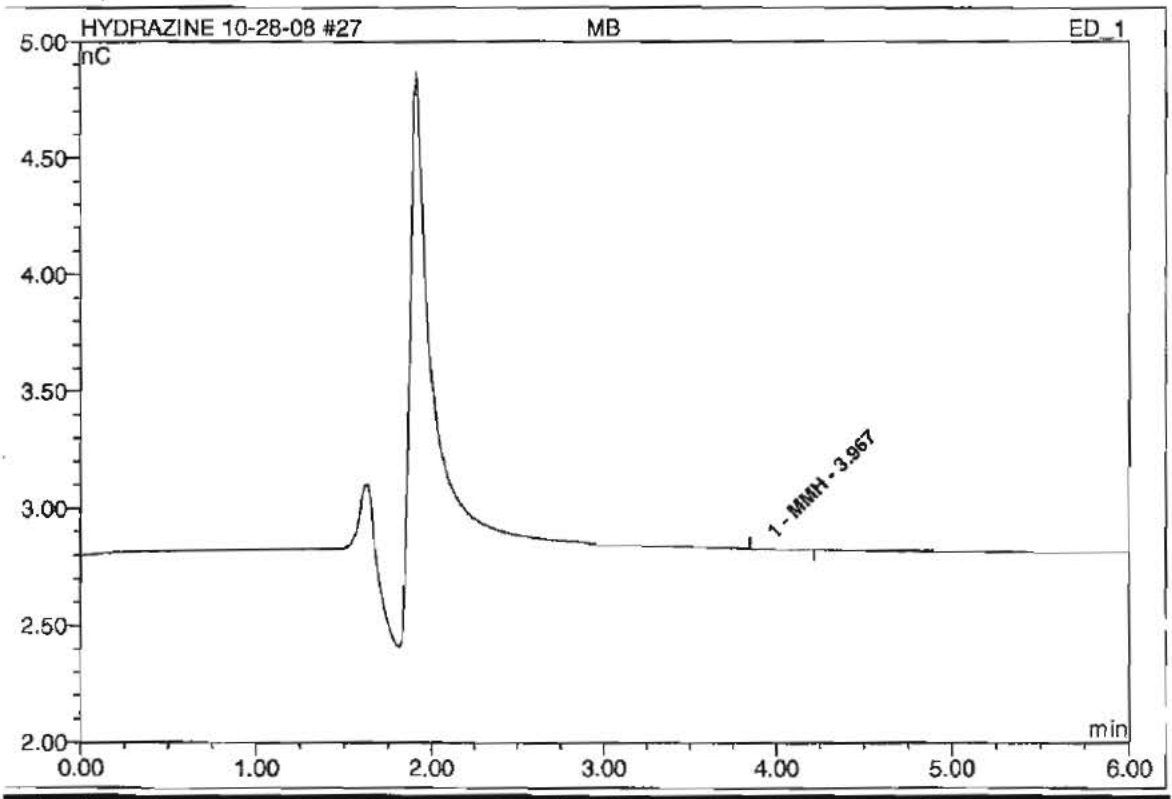
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**48**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 20:00**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.368	3.376	83.01	n.a.	BM
2	4.07	MMH	1.216	0.691	16.99	191.10	MB
Total:			10.584	4.06690	100.00	191.099	

27 MB

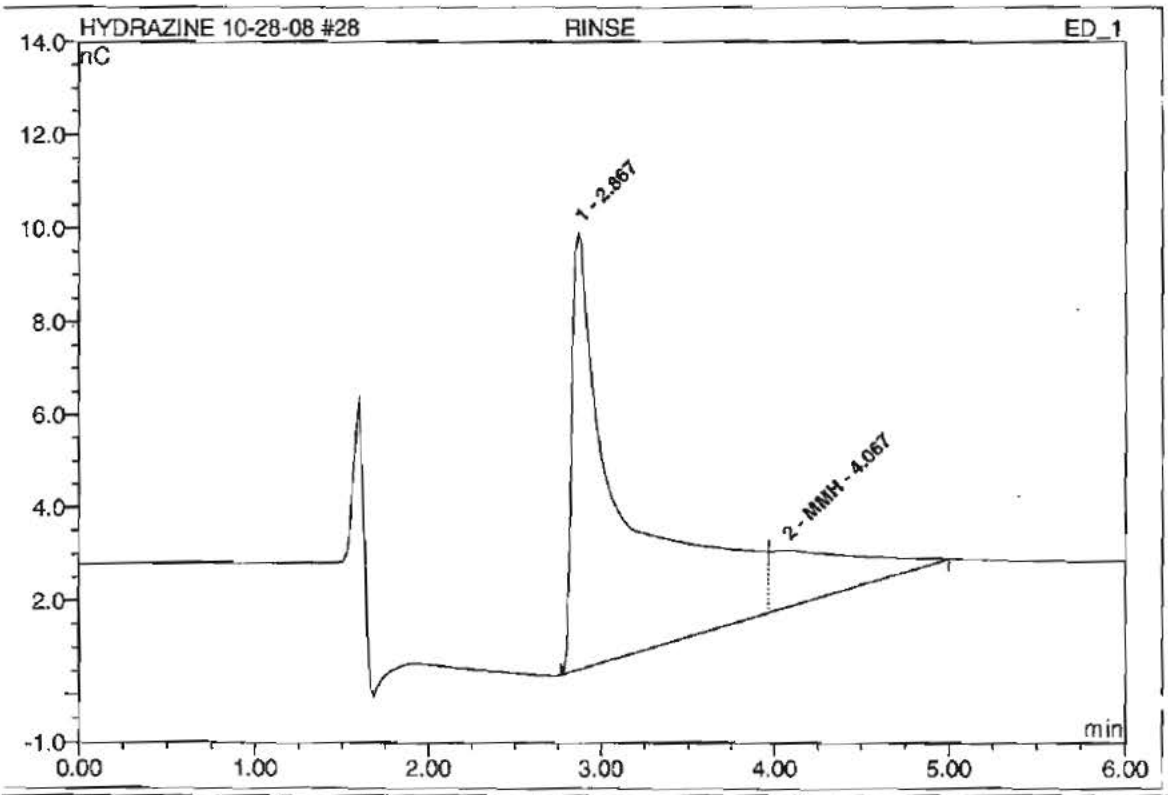
Sample Name:	**MB**	*Injection Volume:*	**200.0**
Vial Number:	**11**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 20:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.97	MMH	0.002	0.001	100.00	0.19	BMB
Total:			0.002	0.00052	100.00	0.189	

28 RINSE

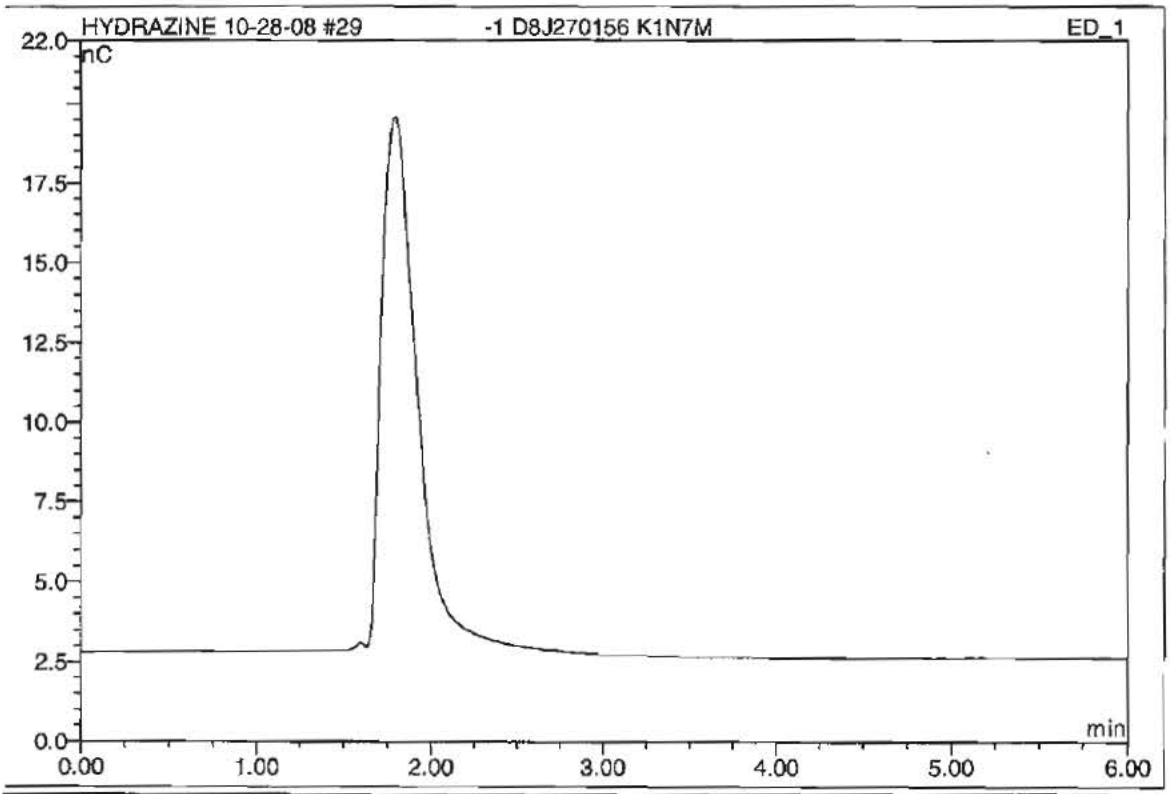
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**49**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 20:17**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.365	3.393	83.48	n.a.	BM
2	4.07	MMH	1.219	0.672	16.52	185.74	MB
Total:			10.585	4.06490	100.00	185.743	

29 -1 D8J270156 K1N7M

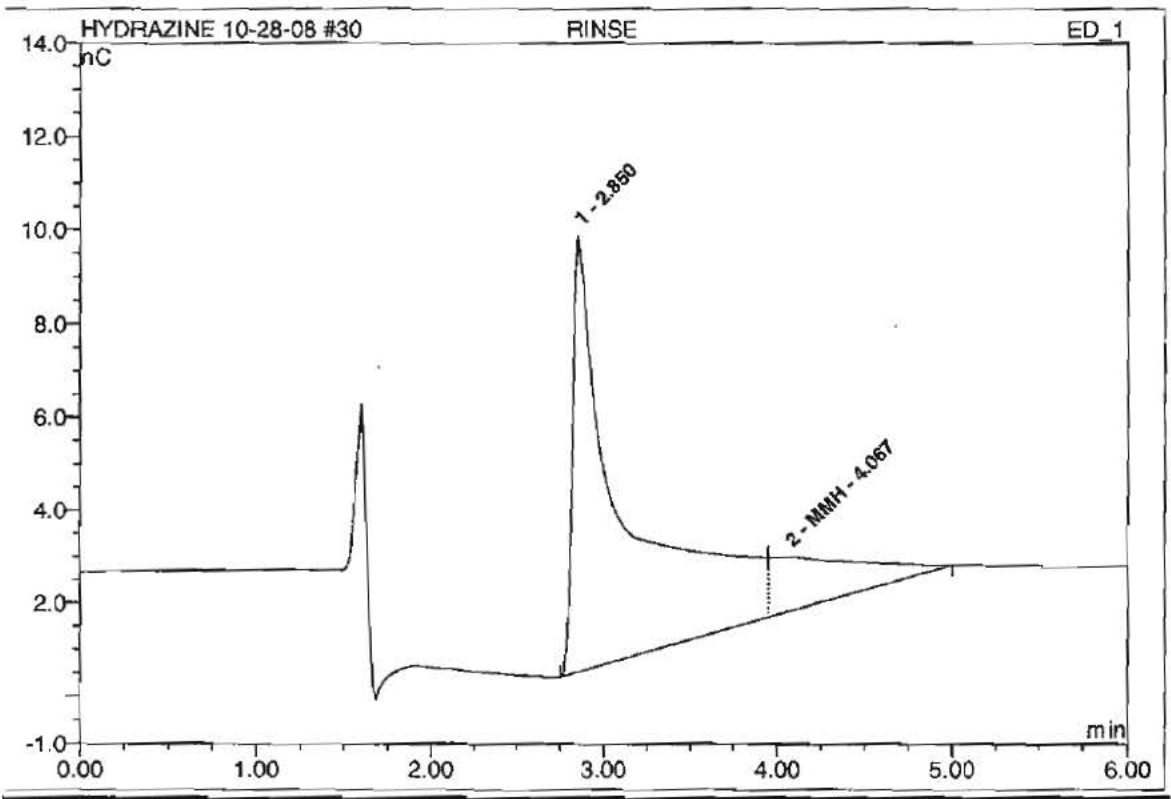
Sample Name:	**-1 D8J270156 K1N7M**	*Injection Volume:*	**200.0**
Vial Number:	**12**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 20:26**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

30 RINSE

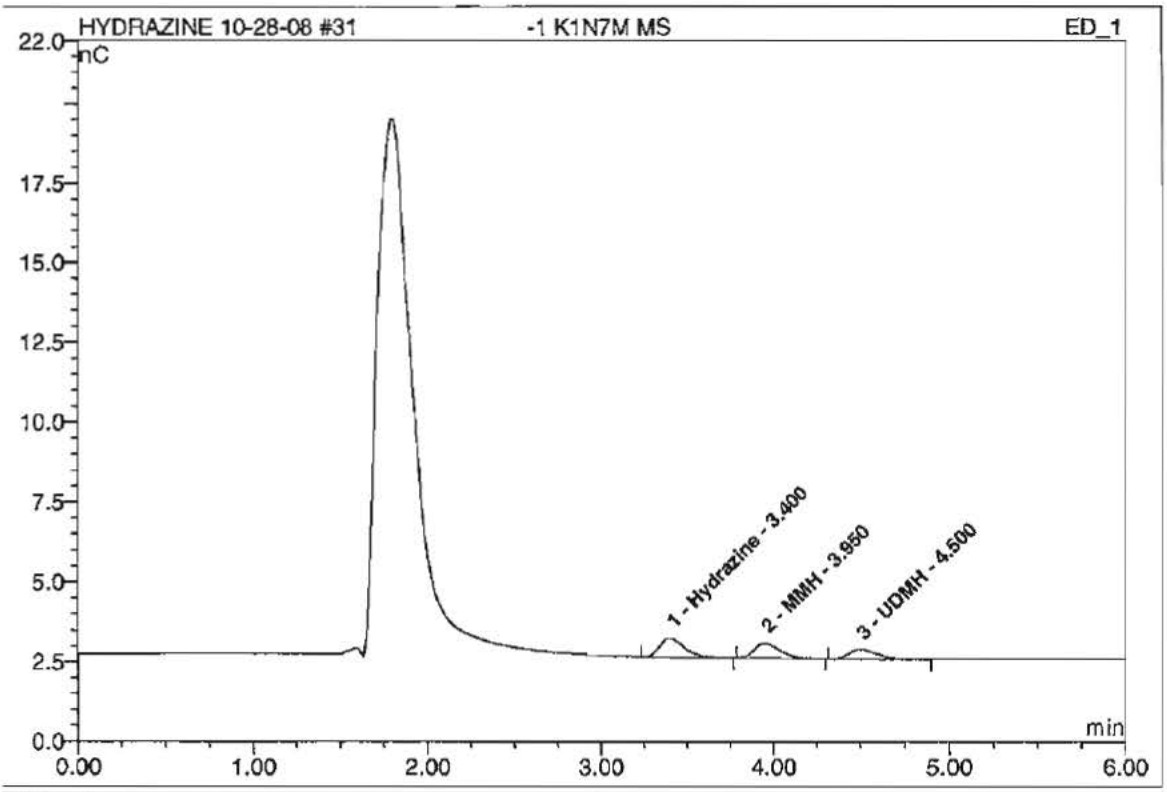
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**45**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 20:35**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.85	n.a.	9.357	3.282	83.07	n.a.	BM
2	4.07	MMH	1.180	0.669	16.93	185.00	MB
Total:			10.537	3.95059	100.00	185.000	

31 -1 K1N7M MS

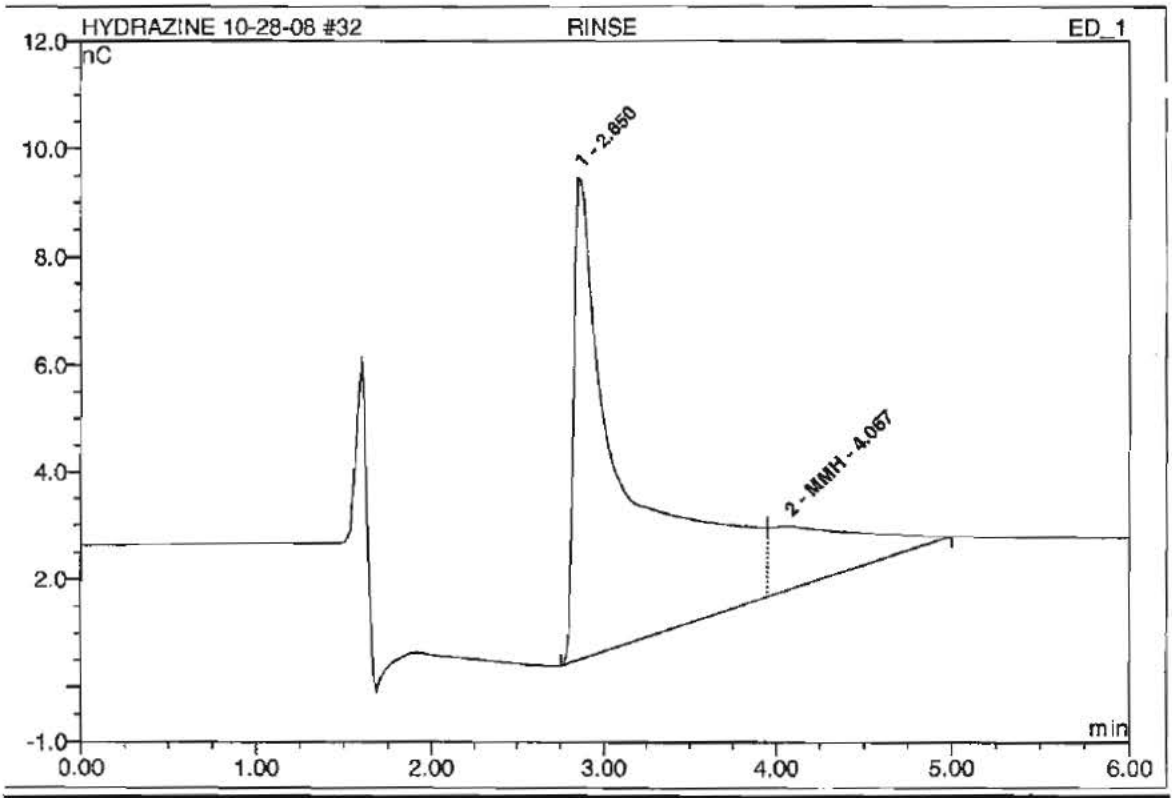
Sample Name:	**-1 K1N7M MS**	*Injection Volume:*	**200.0**
Vial Number:	**13**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 20:43**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.40	Hydrazine	0.605	0.098	41.68	24.48	BMB
2	3.95	MMH	0.475	0.082	34.56	22.59	BMB
3	4.50	UDMH	0.301	0.056	23.77	46.94	BMB
Total:			1.382	0.23592	100.00	94.005	

32 RINSE

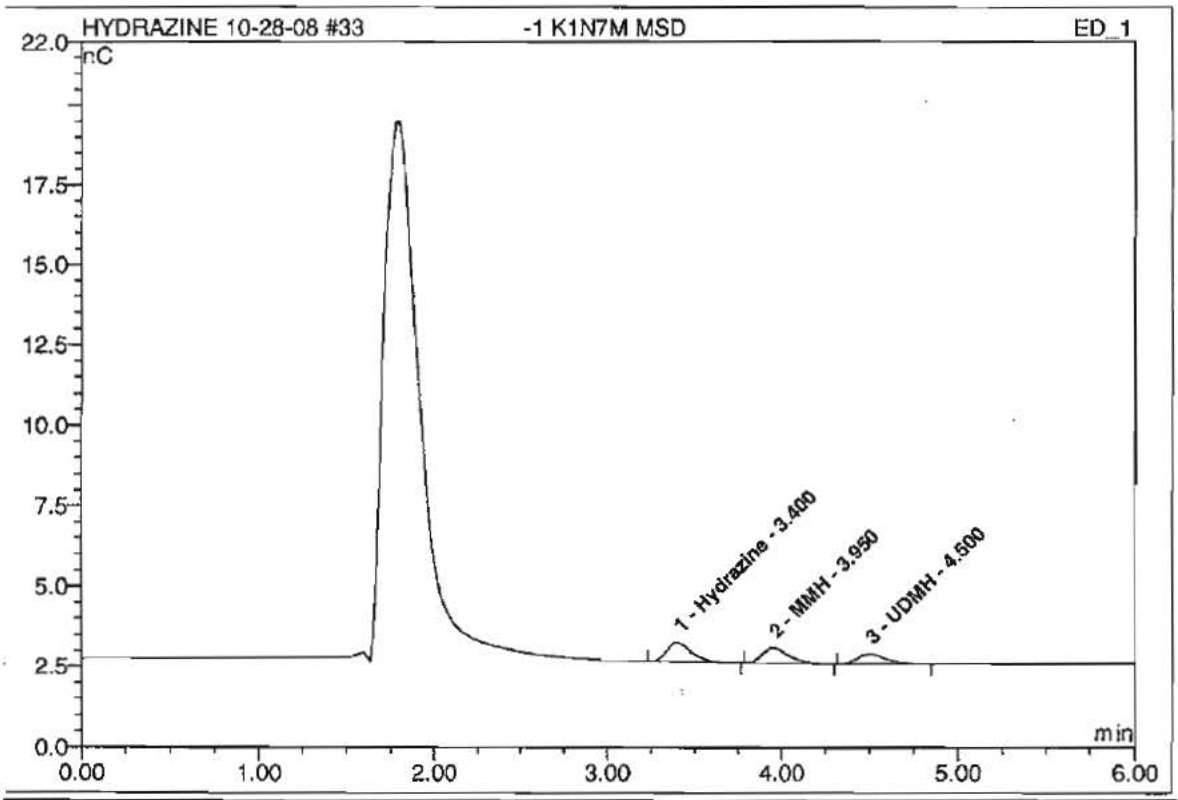
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**46**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 20:52**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.85	n.a.	8.951	3.254	82.97	n.a.	BM
2	4.07	MMH	1.178	0.668	17.03	184.70	MB
Total:			10.129	3.92238	100.00	184.705	

33 -1 K1N7M MSD

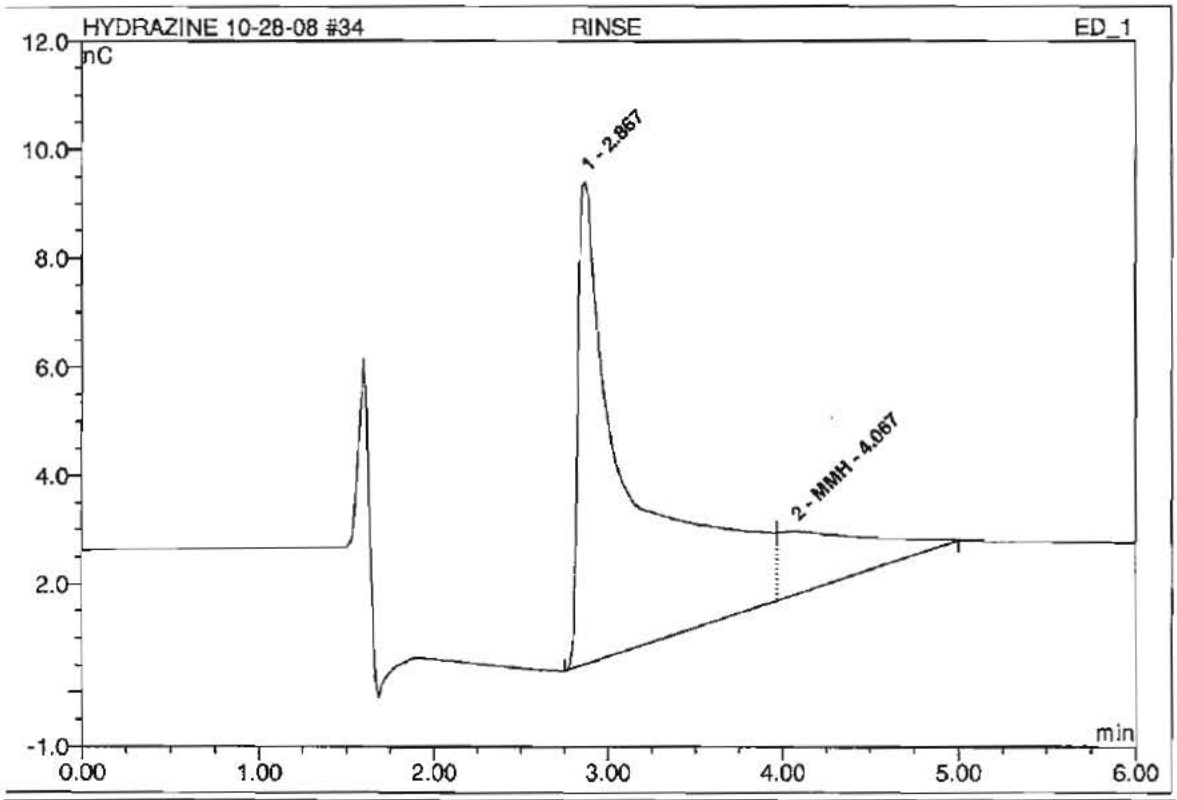
Sample Name:	**-1 K1N7M MSD**	*Injection Volume:*	**200.0**
Vial Number:	**14**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 21:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.40	Hydrazine	0.606	0.098	41.62	24.48	BMB
2	3.95	MMH	0.477	0.082	34.66	22.69	BMB
3	4.50	UDMH	0.302	0.056	23.73	46.94	BMB
Total:			1.384	0.23632	100.00	94.113	

34 RINSE

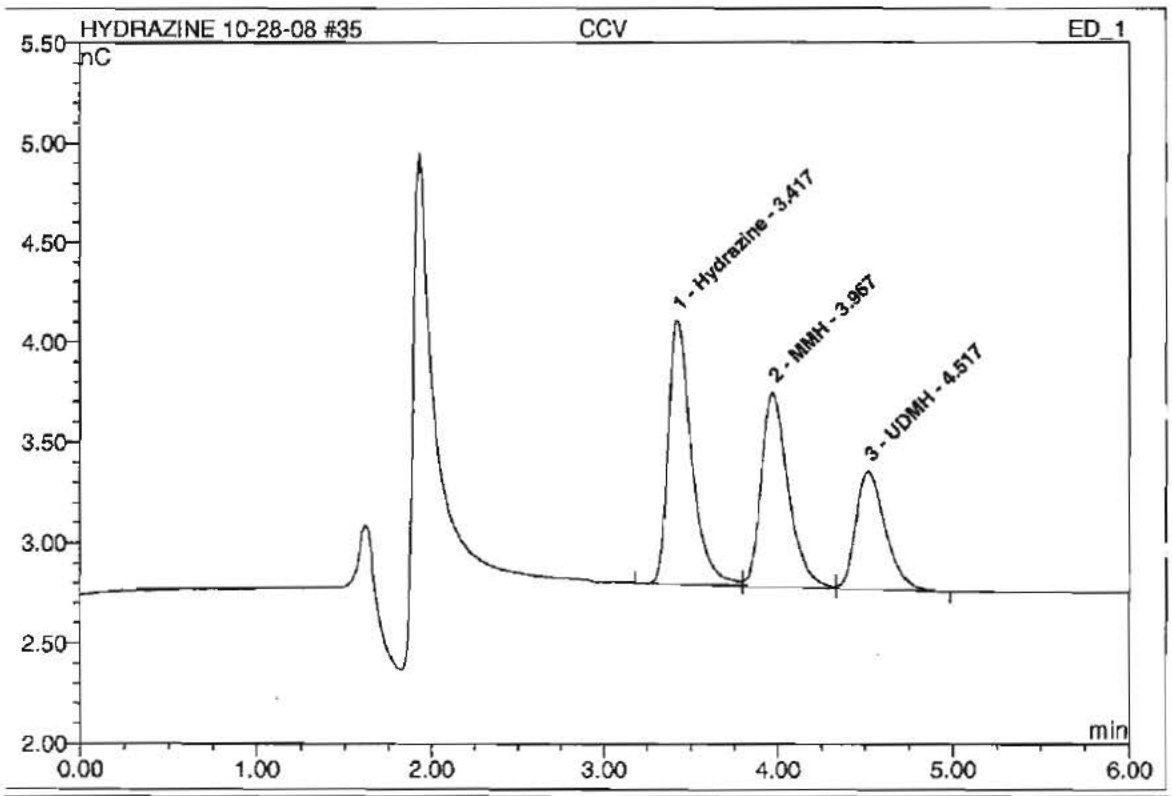
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**47**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 21:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	8.874	3.271	83.52	n.a.	BM
2	4.07	MMH	1.172	0.645	16.48	178.43	MB
Total:			10.046	3.91598	100.00	178.425	

35 CCV

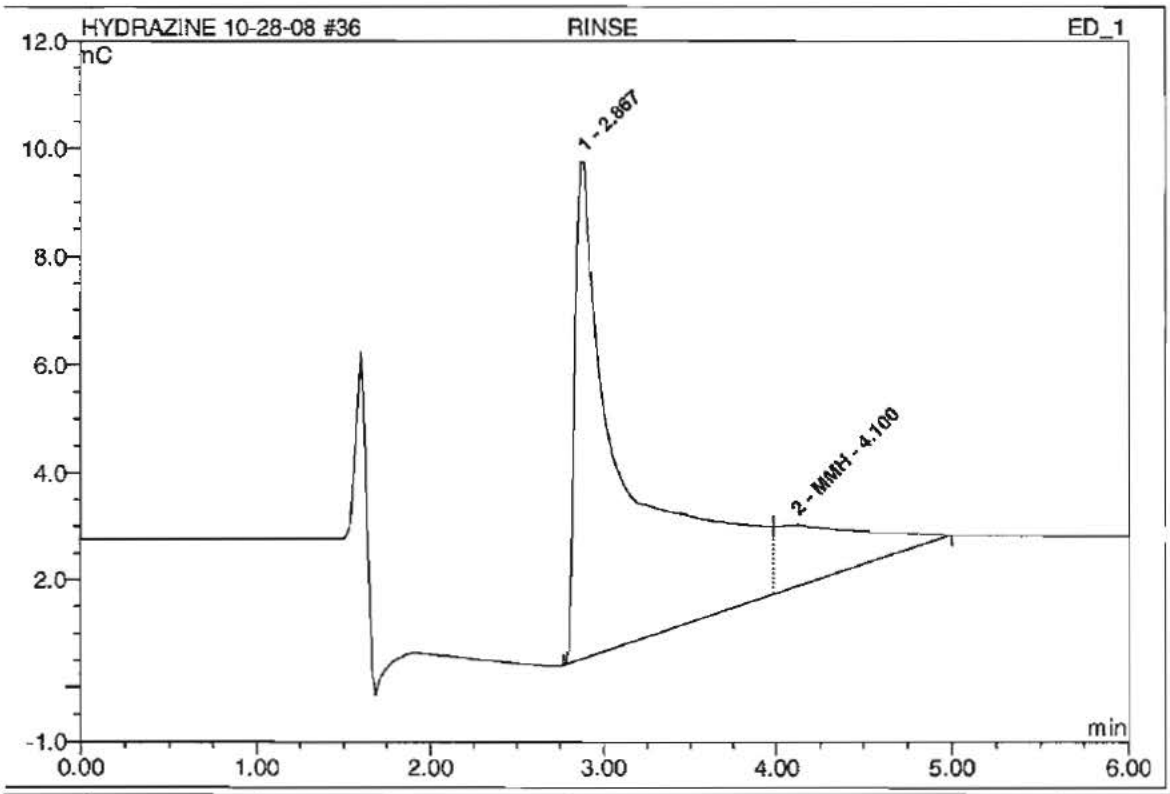
Sample Name:	**CCV**	*Injection Volume:*	**200.0**
Vial Number:	**10**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 21:18**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.42	Hydrazine	1.310	0.203	41.39	49.26	BM
2	3.97	MMH	0.963	0.174	35.38	48.03	M
3	4.52	UDMH	0.587	0.114	23.24	96.61	MB
Total:			2.860	0.49062	100.00	193.900	

36 RINSE

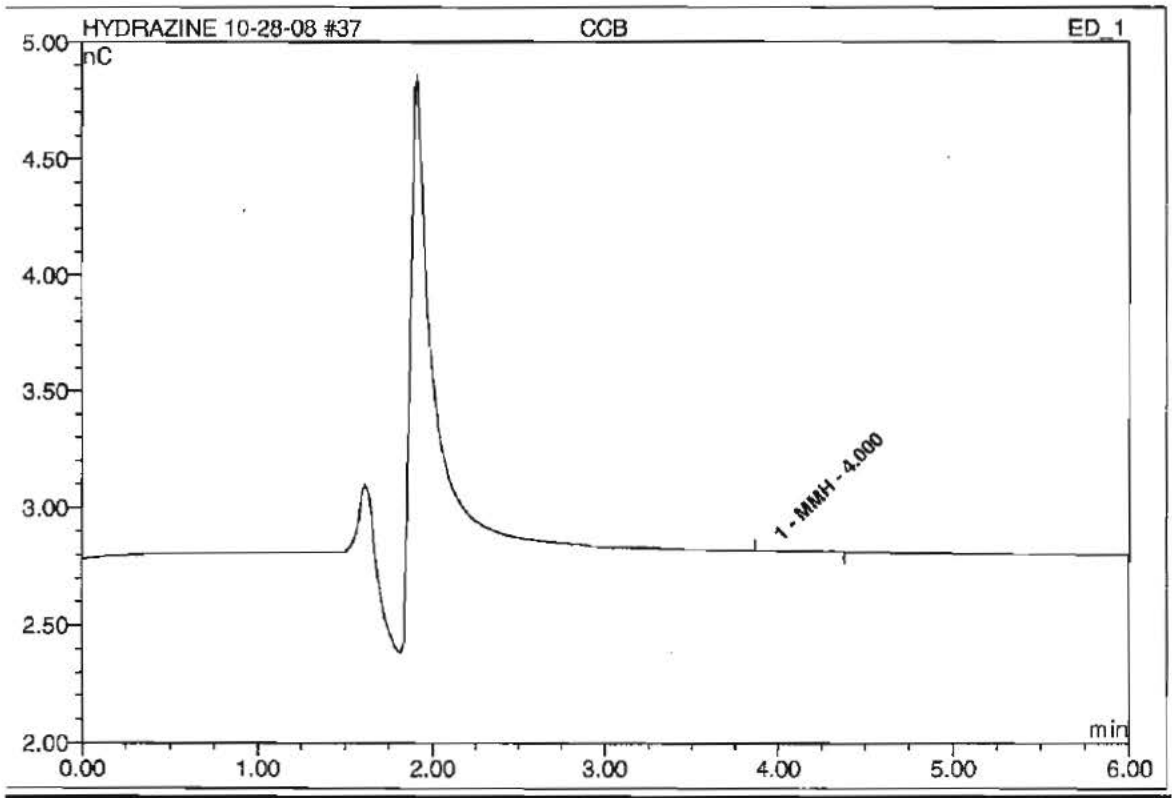
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**48**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 21:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.230	3.362	83.91	n.a.	BM
2	4.10	MMH	1.164	0.645	16.09	178.27	MB
Total:			10.394	4.00657	100.00	178.266	

37 CCB

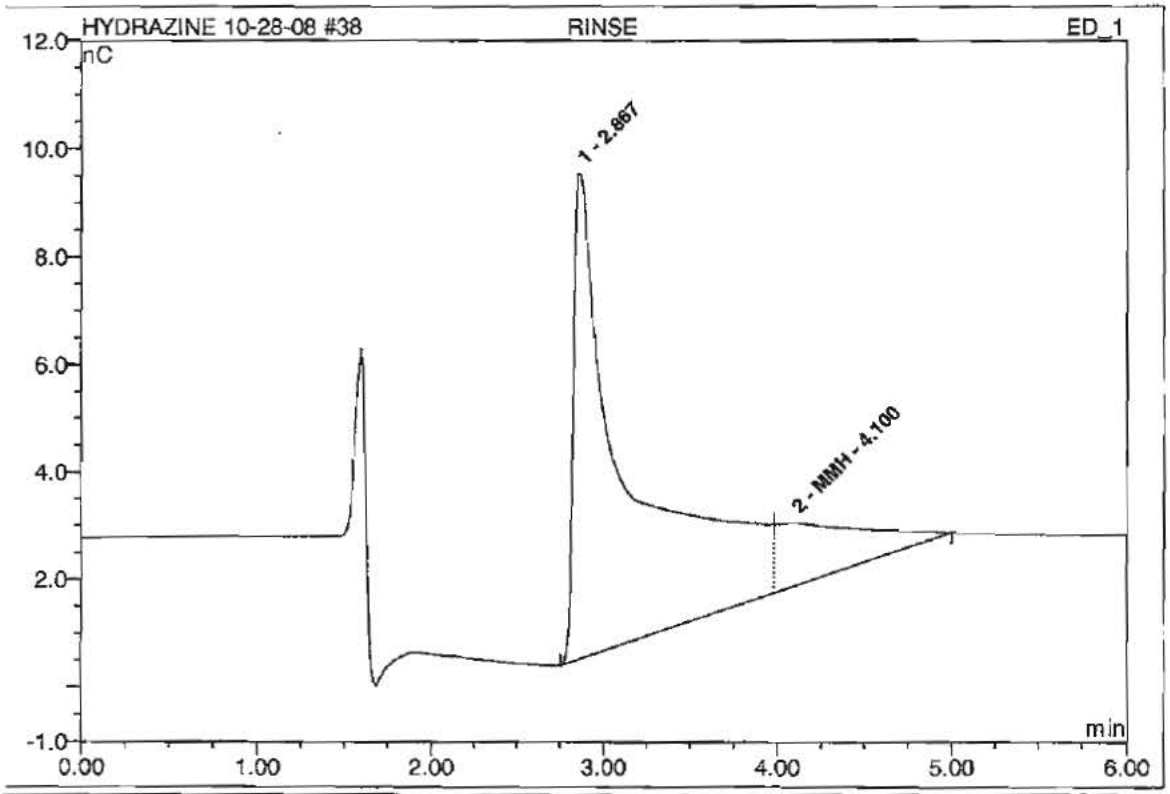
Sample Name:	**CCB**	*Injection Volume:*	**200.0**
Vial Number:	**11**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 21:35**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	4.00	MMH	0.003	0.001	100.00	0.28	BMB
Total:			0.003	0.00085	100.00	0.281	

38 RINSE

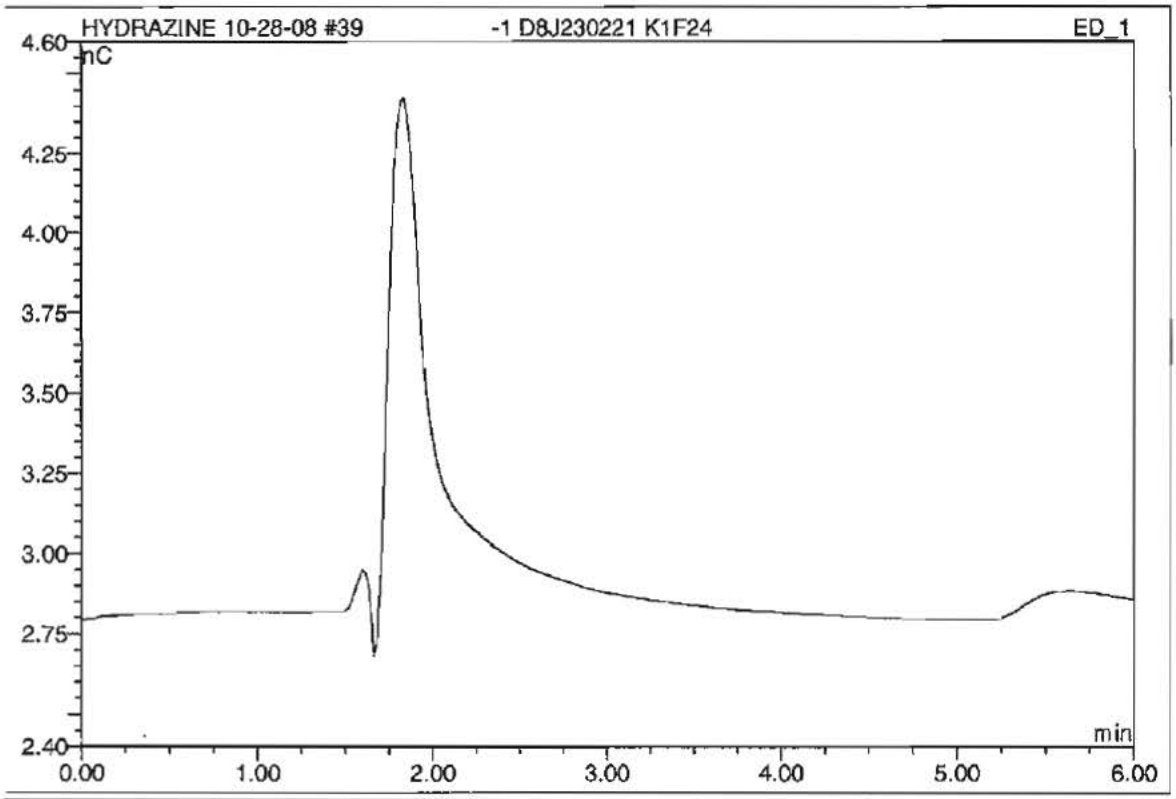
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**49**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 21:44**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	8.992	3.362	83.92	n.a.	BM
2	4.10	MMH	1.162	0.644	16.08	178.17	MB
Total:			10.155	4.00653	100.00	178.166	

39 -1 D8J230221 K1F24

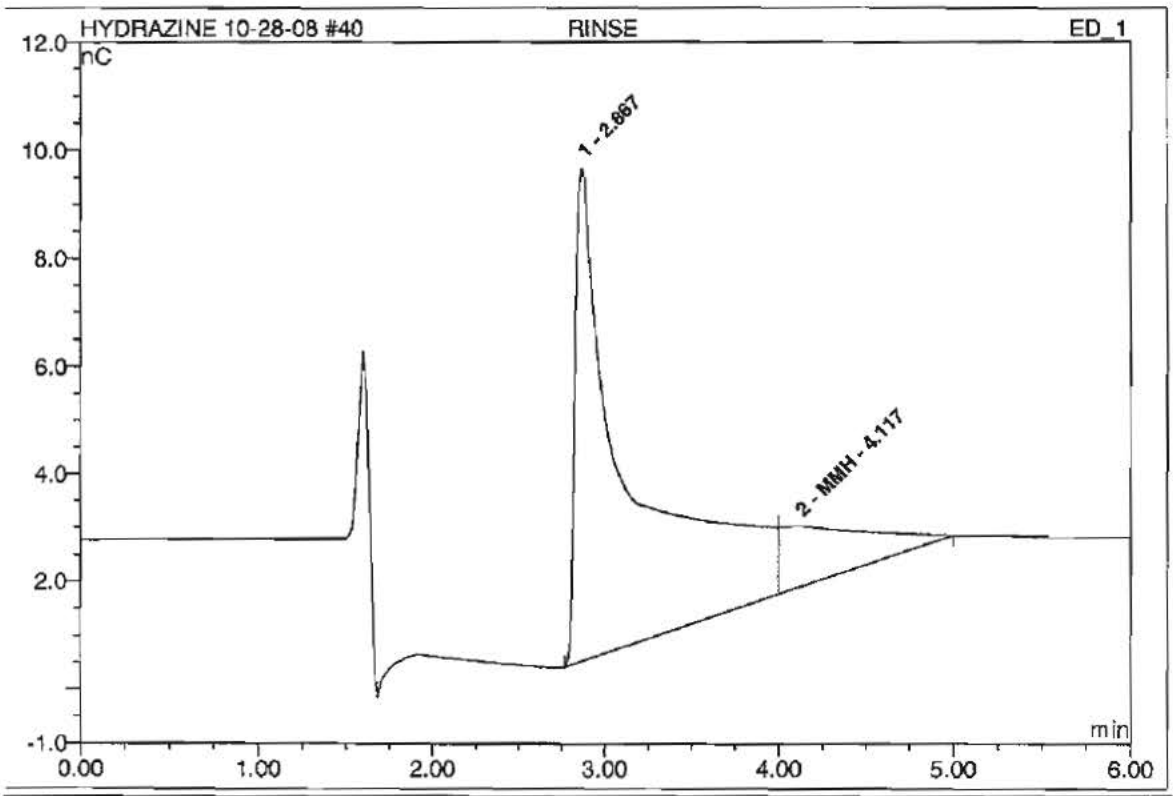
Sample Name:	**-1 D8J230221 K1F24**	*Injection Volume:*	**200.0**
Vial Number:	**15**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 21:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

40 RINSE

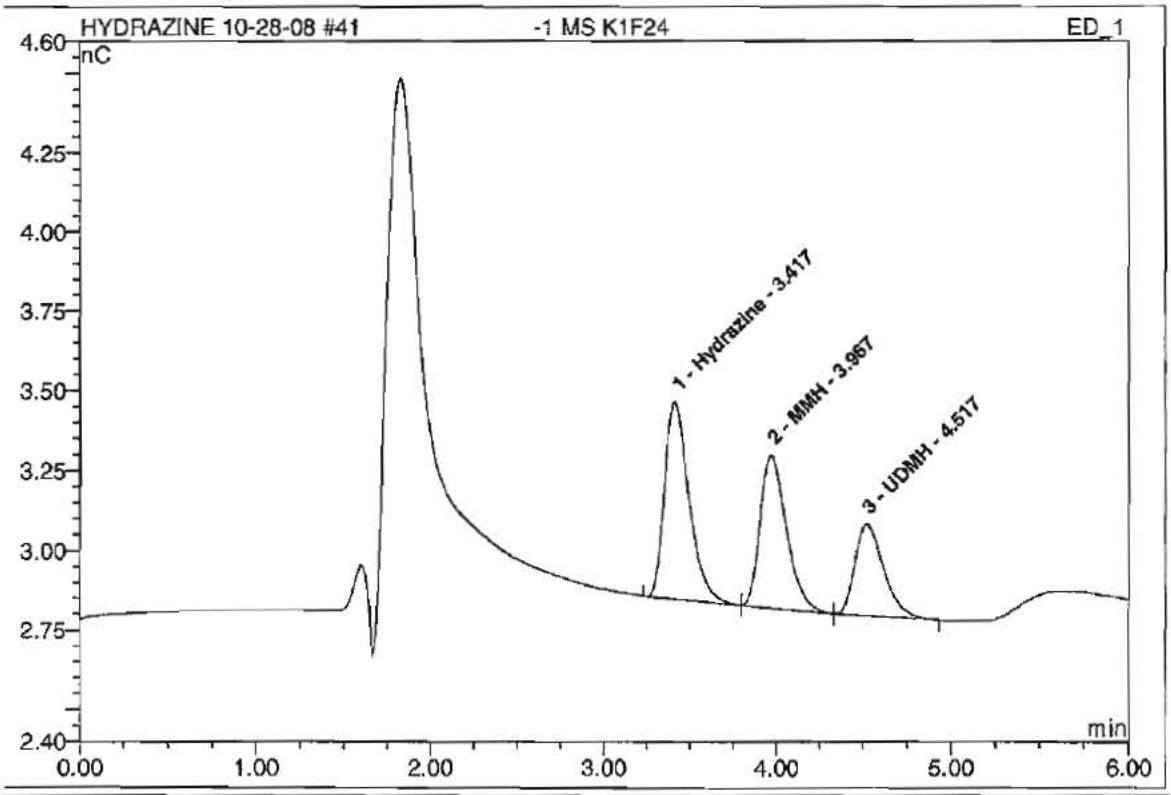
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**45**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 22:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.141	3.377	84.49	n.a.	BM
2	4.12	MMH	1.134	0.620	15.51	171.47	MB
Total:			10.275	3.99717	100.00	171.469	

41 -1 MS K1F24

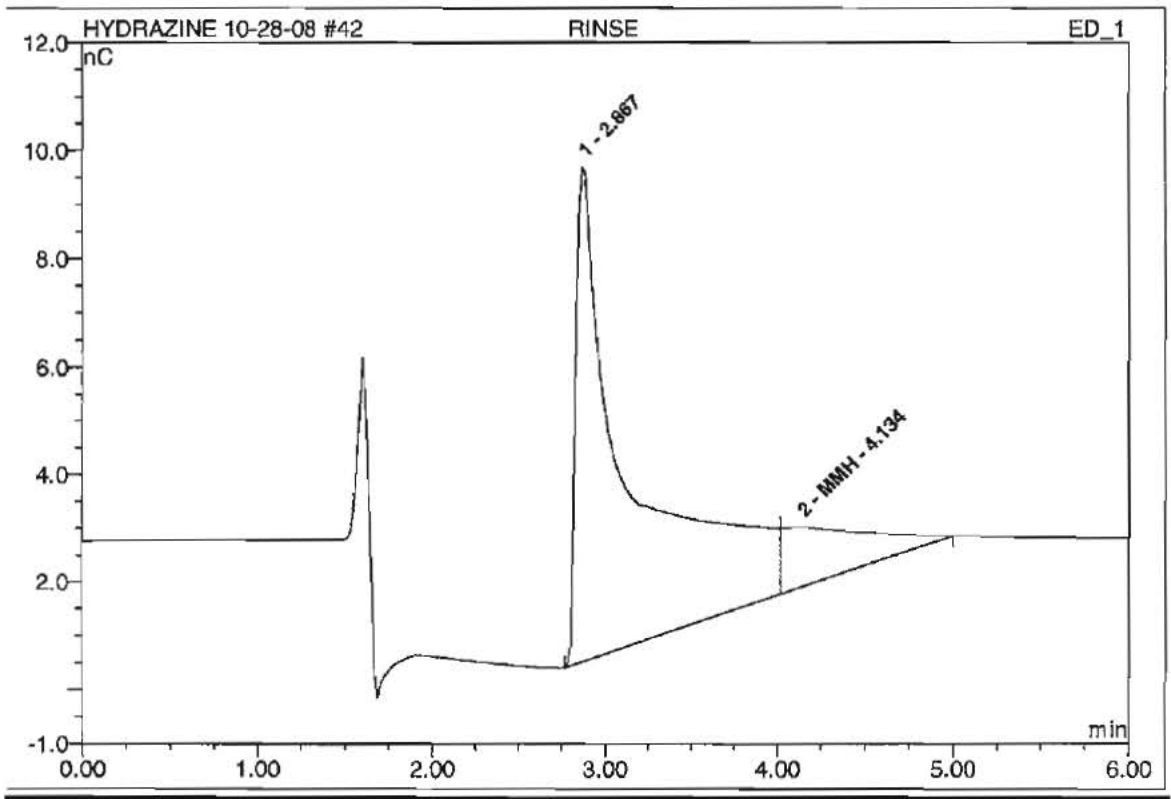
Sample Name:	**-1 MS K1F24**	*Injection Volume:*	**200.0**
Vial Number:	**16**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 22:10**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.42	Hydrazine	0.619	0.103	42.42	25.47	BM
2	3.97	MMH	0.479	0.084	34.81	23.31	Mb
3	4.52	UDMH	0.288	0.055	22.77	46.06	bMB
Total:			1.386	0.24176	100.00	94.853	

42 RINSE

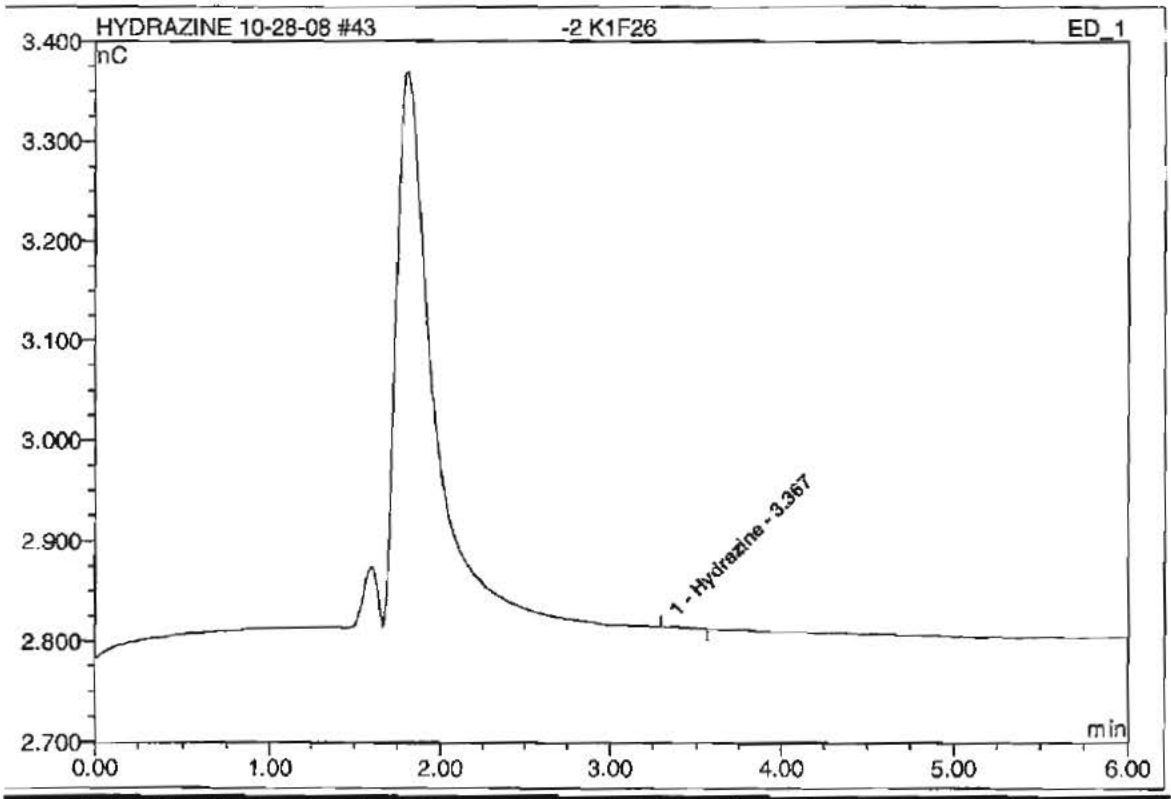
Sample Name:	RINSE	*Injection Volume:*	**200.0**
Vial Number:	**46**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 22:19**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.163	3.397	85.00	n.a.	BM
2	4.13	MMH	1.113	0.599	15.00	165.74	MB
Total:			10.276	3.99621	100.00	165.740	

43 -2 K1F26

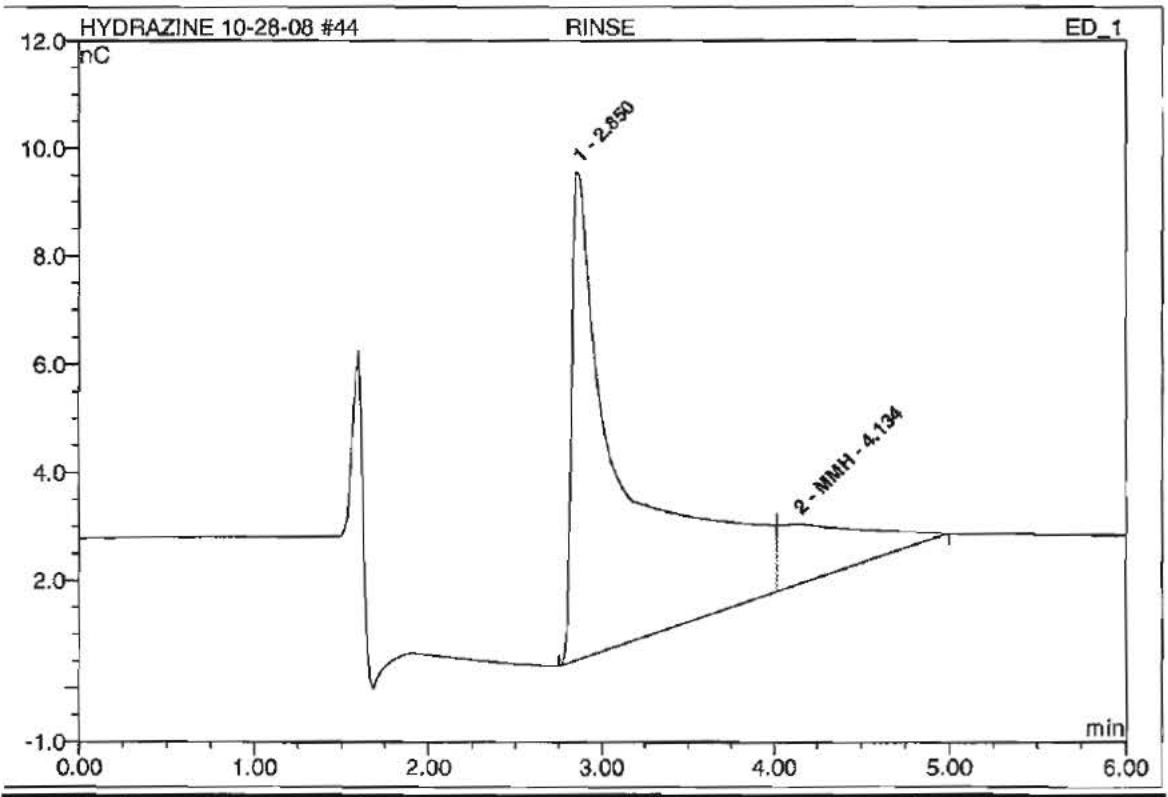
Sample Name:	**-2 K1F26**	*Injection Volume:*	**200.0**
Vial Number:	**17**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 22:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.37	Hydrazine	0.001	0.000	100.00	1.24	BMB
Total:			0.001	0.00016	100.00	1.242	

44 RINSE

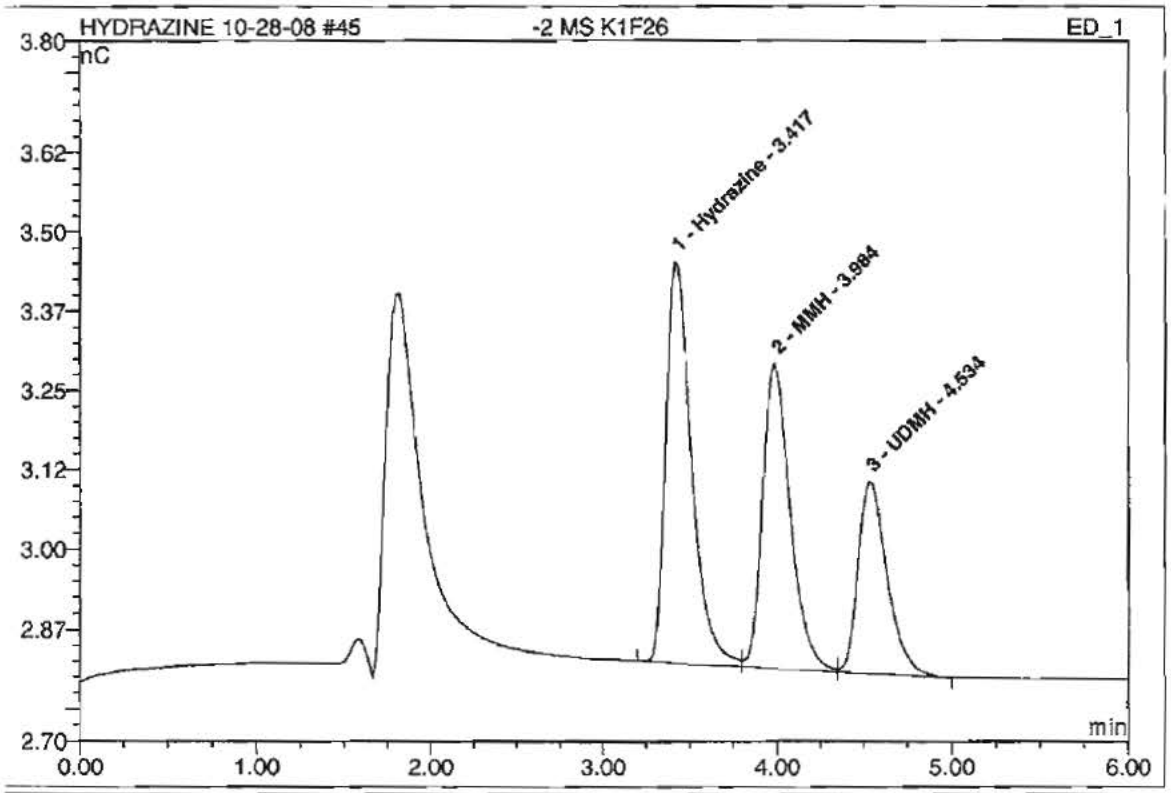
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**47**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 22:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.85	n.a.	9.038	3.400	84.96	n.a.	BM
2	4.13	MMH	1.116	0.602	15.04	166.51	MB
Total:			10.153	4.00249	100.00	166.514	

45 -2 MS K1F26

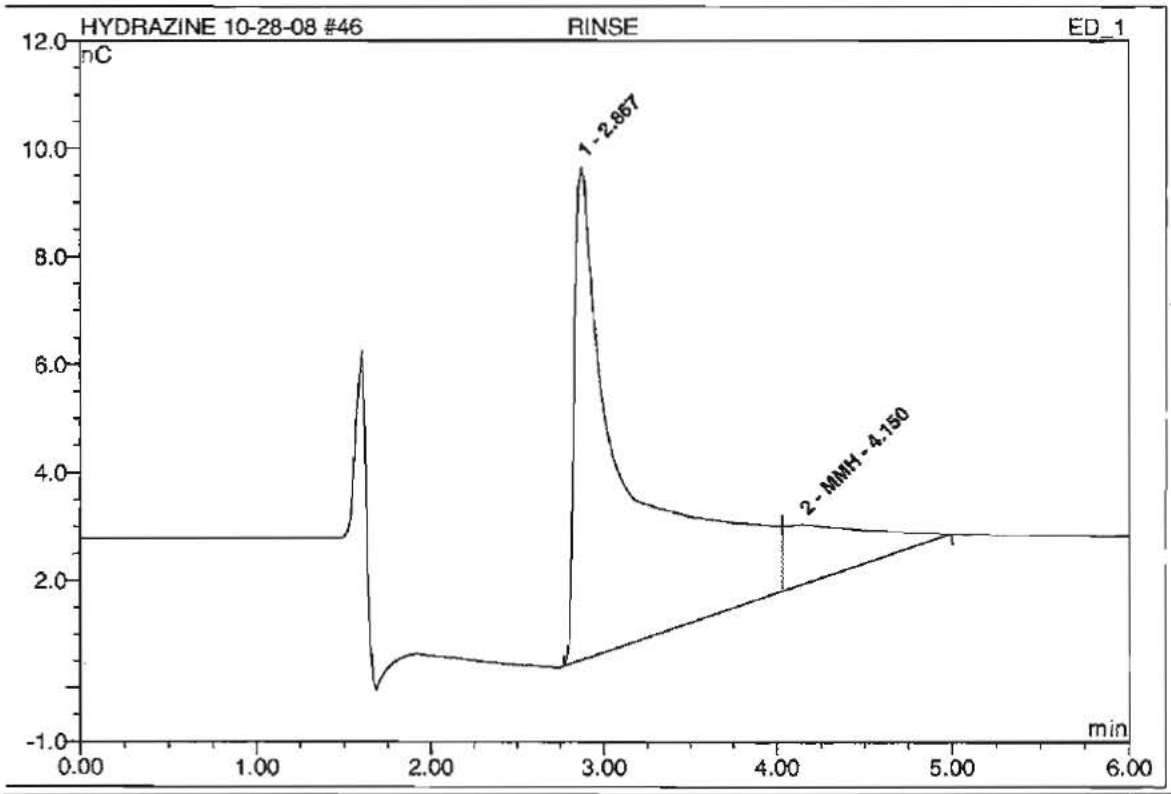
Sample Name:	**-2 MS K1F26**	*Injection Volume:*	**200.0**
Vial Number:	**18**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 22:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.42	Hydrazine	0.630	0.107	42.55	26.62	BM
2	3.98	MMH	0.479	0.087	34.34	24.01	M
3	4.53	UDMH	0.301	0.058	23.12	48.90	MB
Total:			1.410	0.25240	100.00	99.524	

46 RINSE

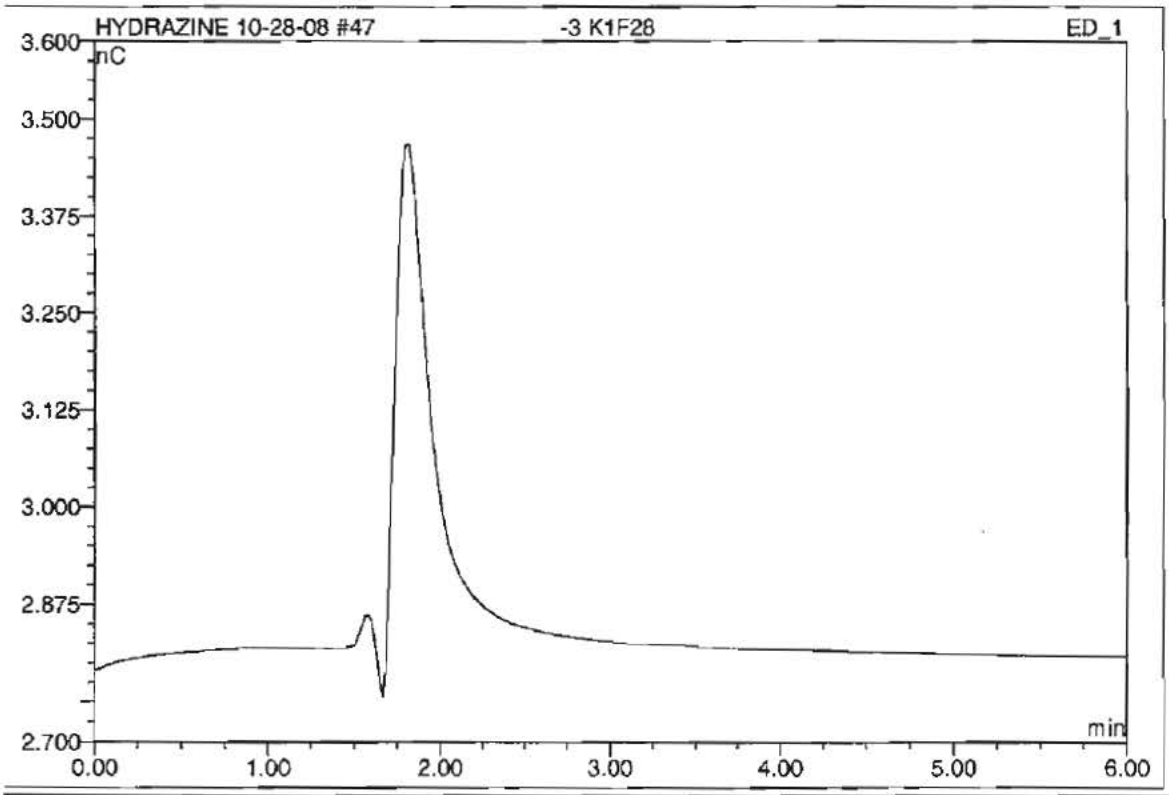
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**48**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 22:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.123	3.433	85.49	n.a.	BM
2	4.15	MMH	1.095	0.583	14.51	161.15	MB
Total:			10.218	4.01569	100.00	161.146	

47 -3 K1F28

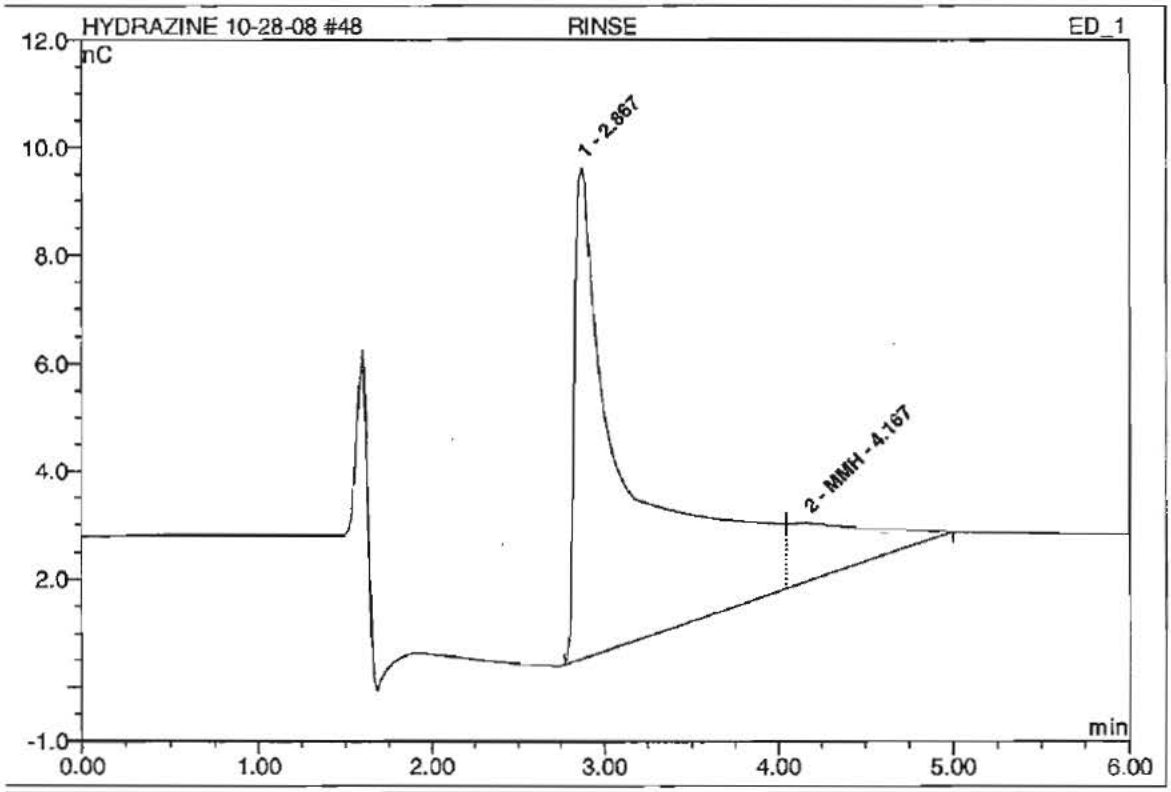
Sample Name:	**-3 K1F28**	*Injection Volume:*	**200.0**
Vial Number:	**19**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 23:02**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

48 RINSE

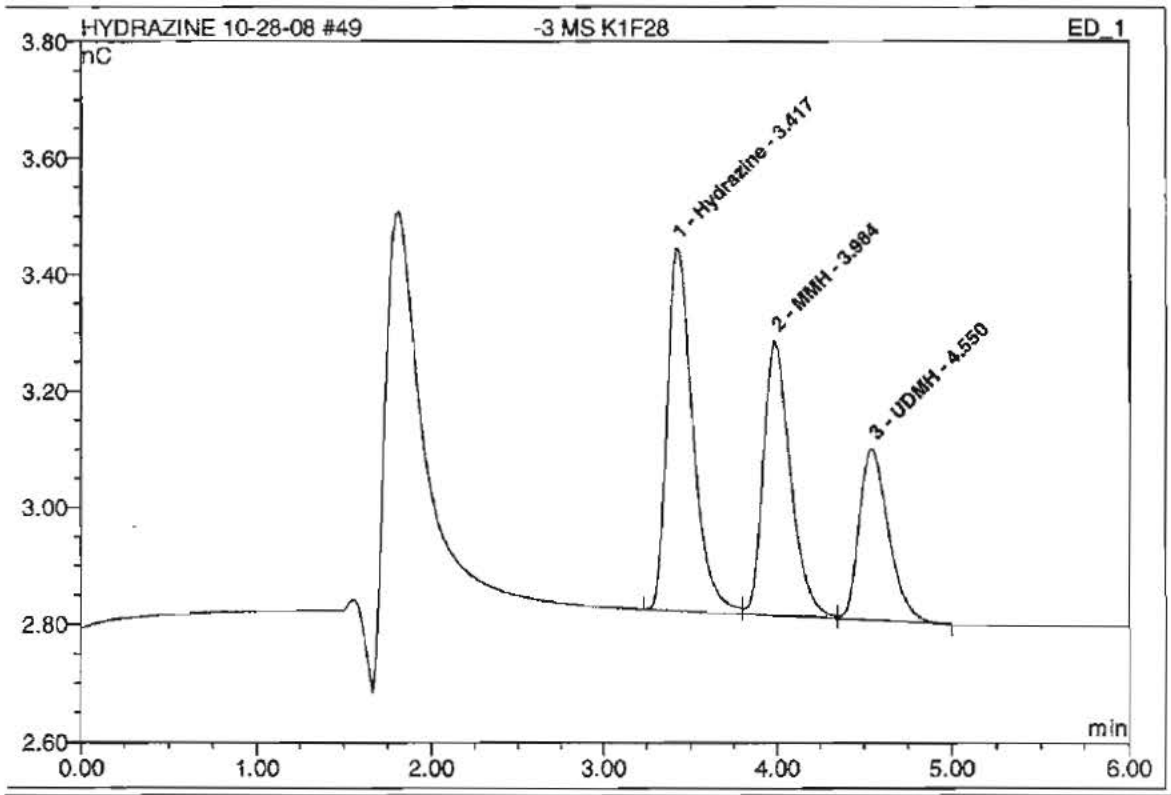
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**49**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 23:11**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.077	3.446	85.96	n.a.	BM
2	4.17	MMH	1.072	0.563	14.04	155.67	MB
Total:			10.150	4.00892	100.00	155.667	

49 -3 MS K1F28

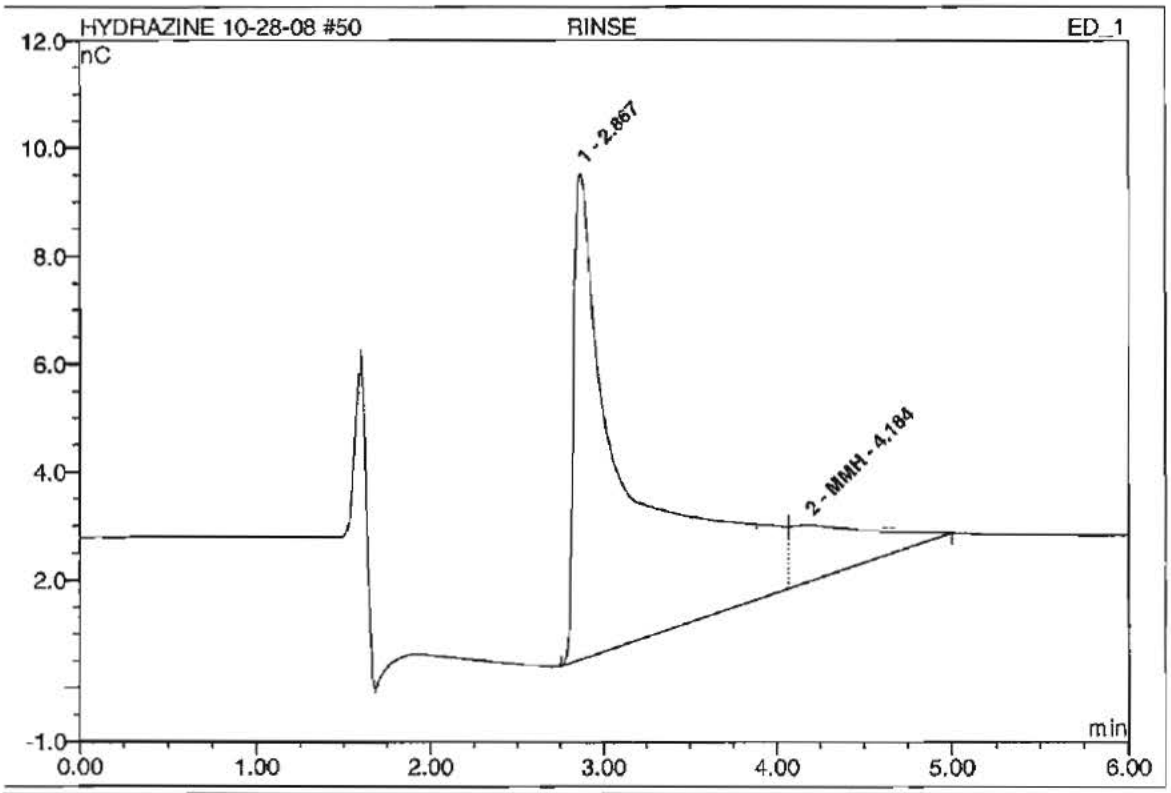
Sample Name:	**-3 MS K1F28**	*Injection Volume:*	**200.0**
Vial Number:	**20**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 23:19**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.42	Hydrazine	0.621	0.106	42.70	26.37	BM
2	3.98	MMH	0.471	0.085	34.27	23.64	M
3	4.55	UDMH	0.294	0.057	23.03	48.04	MB
Total:			1.386	0.24901	100.00	98.046	

50 RINSE

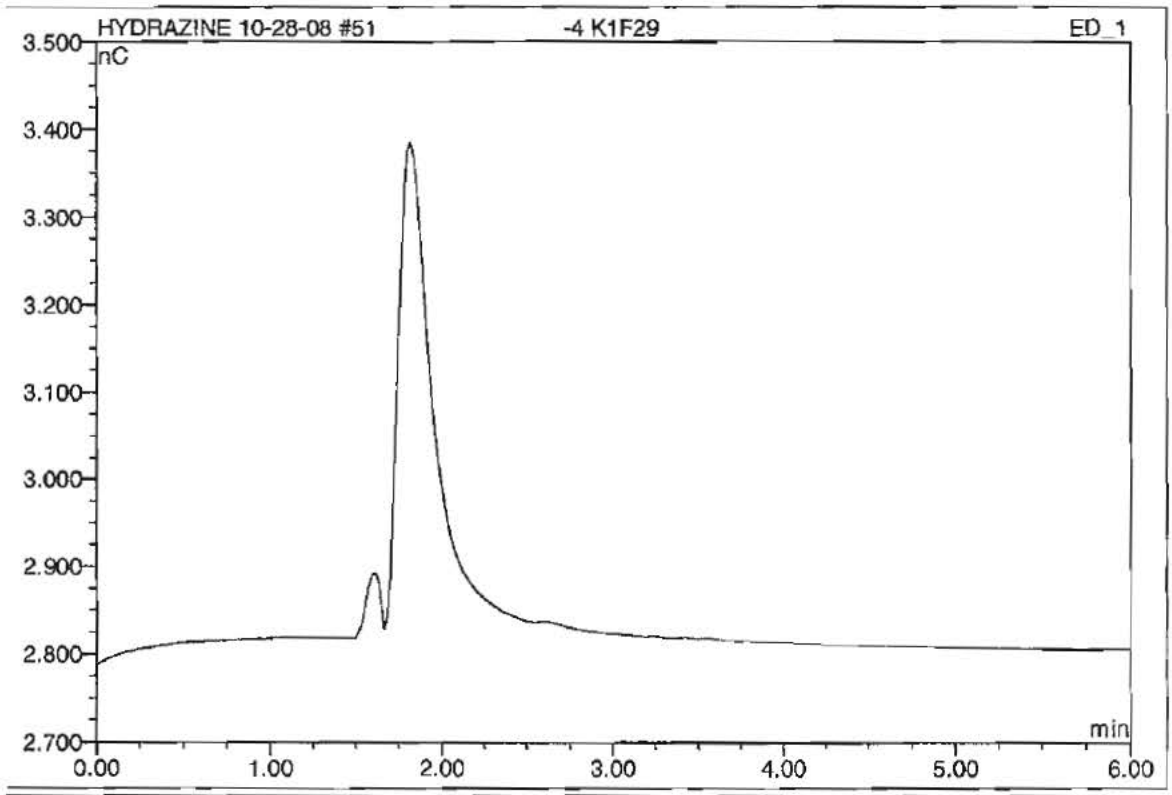
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**45**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 23:28**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	8.984	3.452	86.48	n.a.	BM
2	4.18	MMH	1.042	0.539	13.52	149.17	MB
Total:			10.026	3.99091	100.00	149.171	

51 -4 K1F29

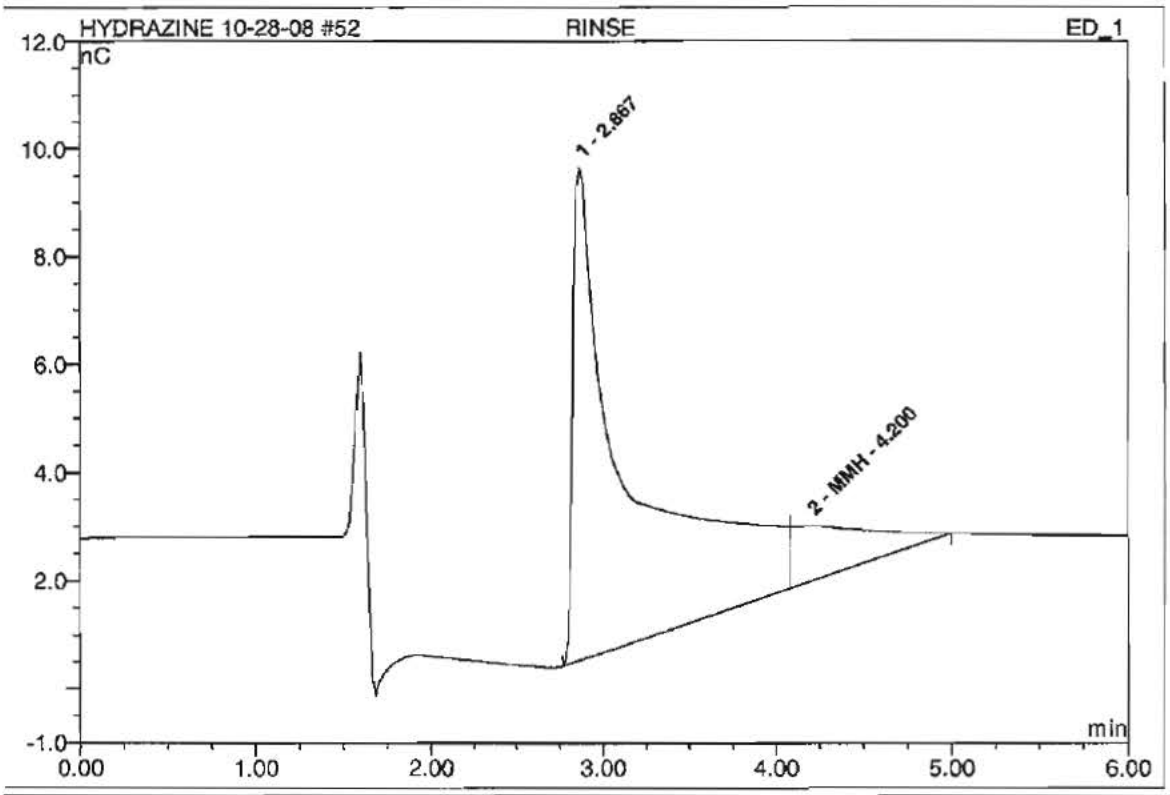
Sample Name:	**-4 K1F29**	*Injection Volume:*	**200.0**
Vial Number:	**21**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 23:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

52 RINSE

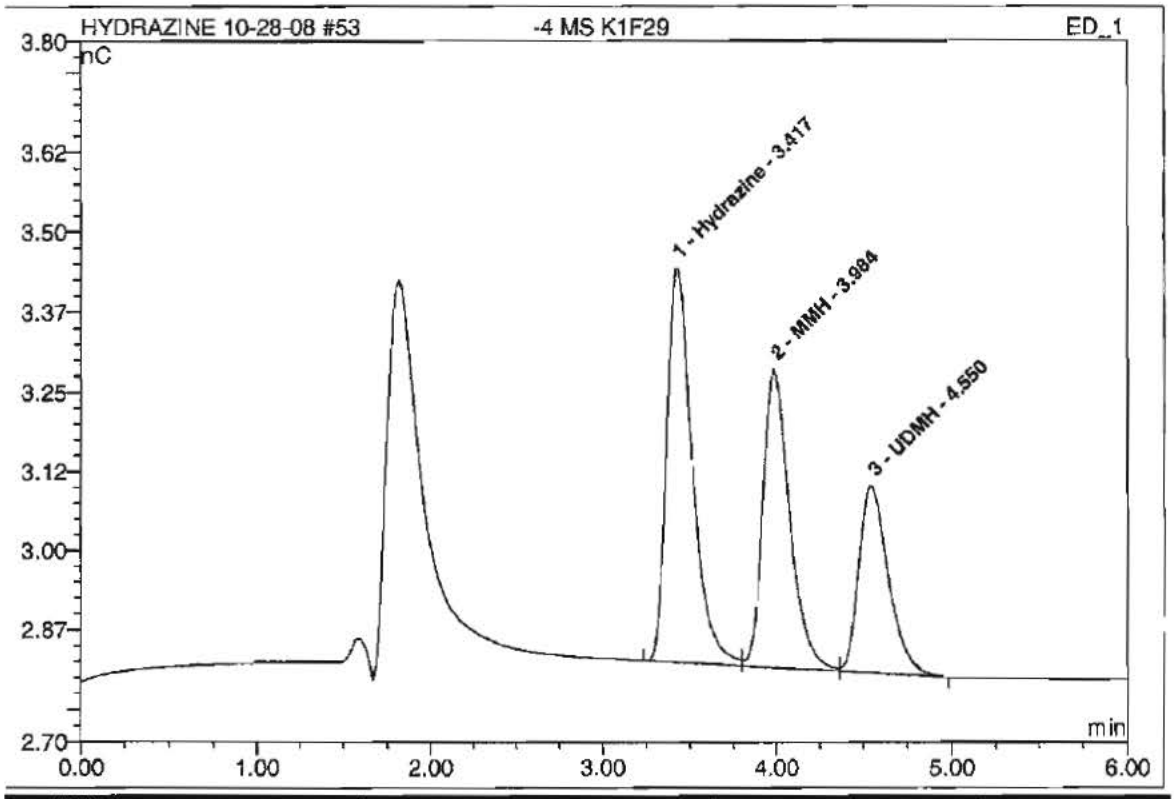
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**46**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 23:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.114	3.484	86.95	n.a.	BM
2	4.20	MMH	1.024	0.523	13.05	144.63	MB
Total:			10.138	4.00698	100.00	144.625	

53 -4 MS K1F29

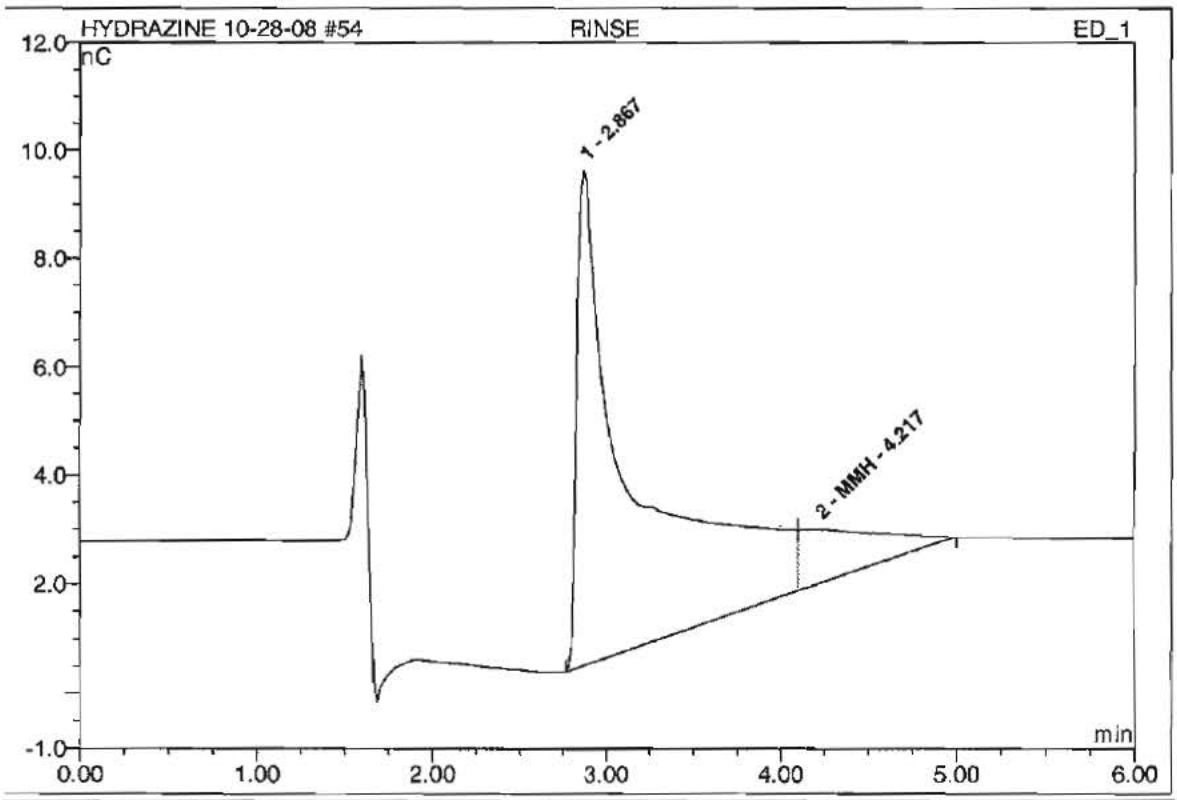
Sample Name:	**-4 MS K1F29**	*Injection Volume:*	**200.0**
Vial Number:	**22**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/28/2008 23:54**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.42	Hydrazine	0.618	0.106	42.62	26.27	BM
2	3.98	MMH	0.470	0.085	34.31	23.62	M
3	4.55	UDMH	0.295	0.057	23.06	48.01	MB
Total:			1.383	0.24849	100.00	97.895	

54 RINSE

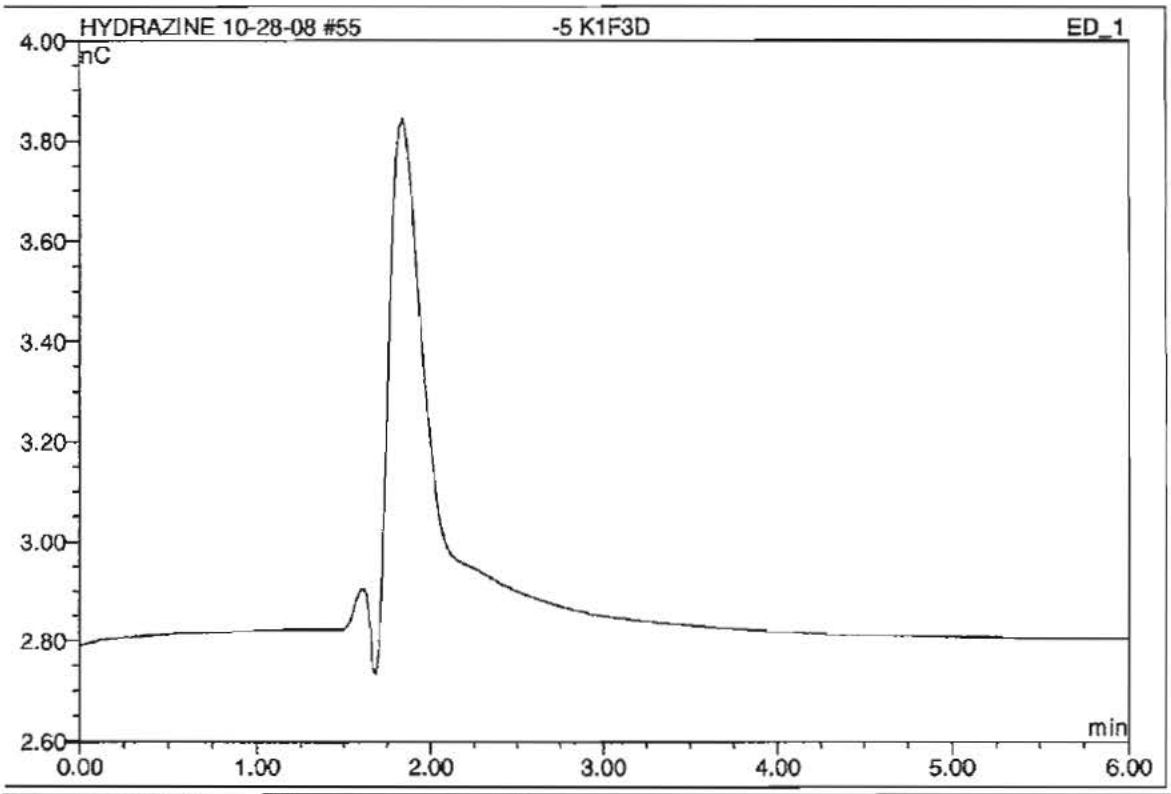
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**47**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 0:03**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.112	3.502	87.45	n.a.	BM
2	4.22	MMH	0.998	0.502	12.55	138.96	MB
Total:			10.109	4.00408	100.00	138.957	

55 -5 K1F3D

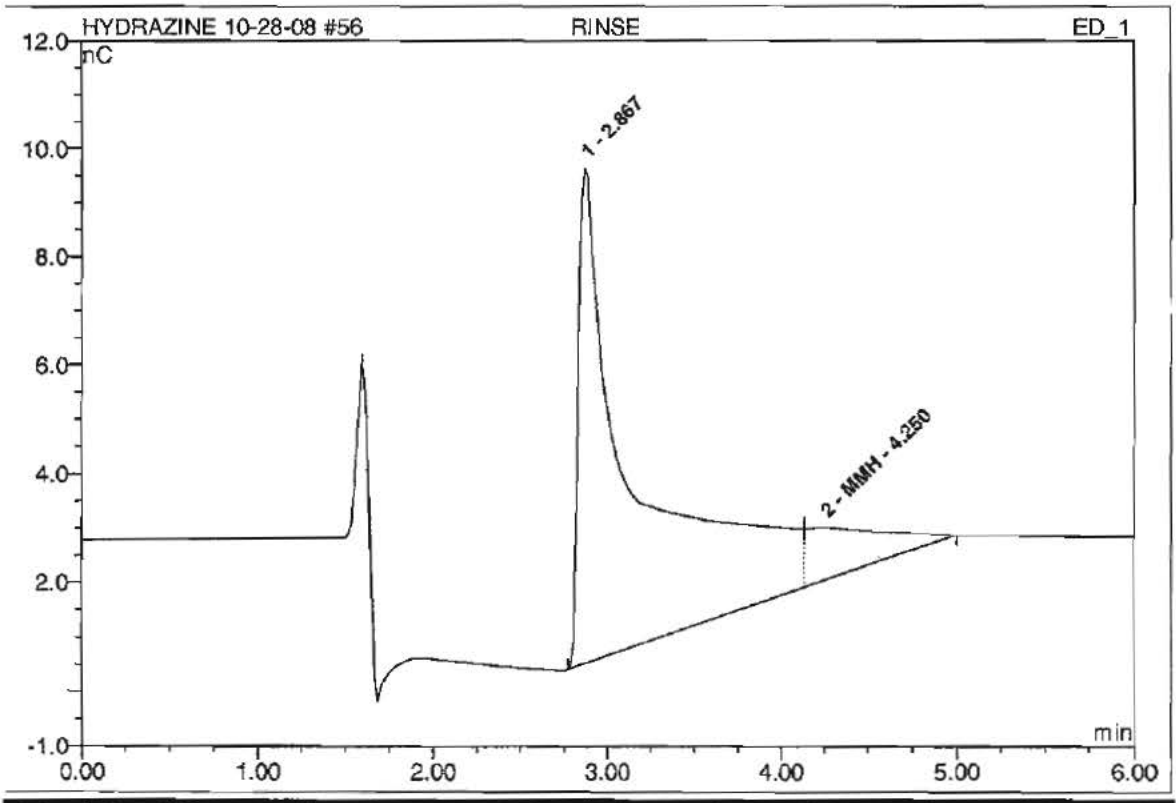
Sample Name:	**-5 K1F3D**	*Injection Volume:*	**200.0**
Vial Number:	**23**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 0:11**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

56 RINSE

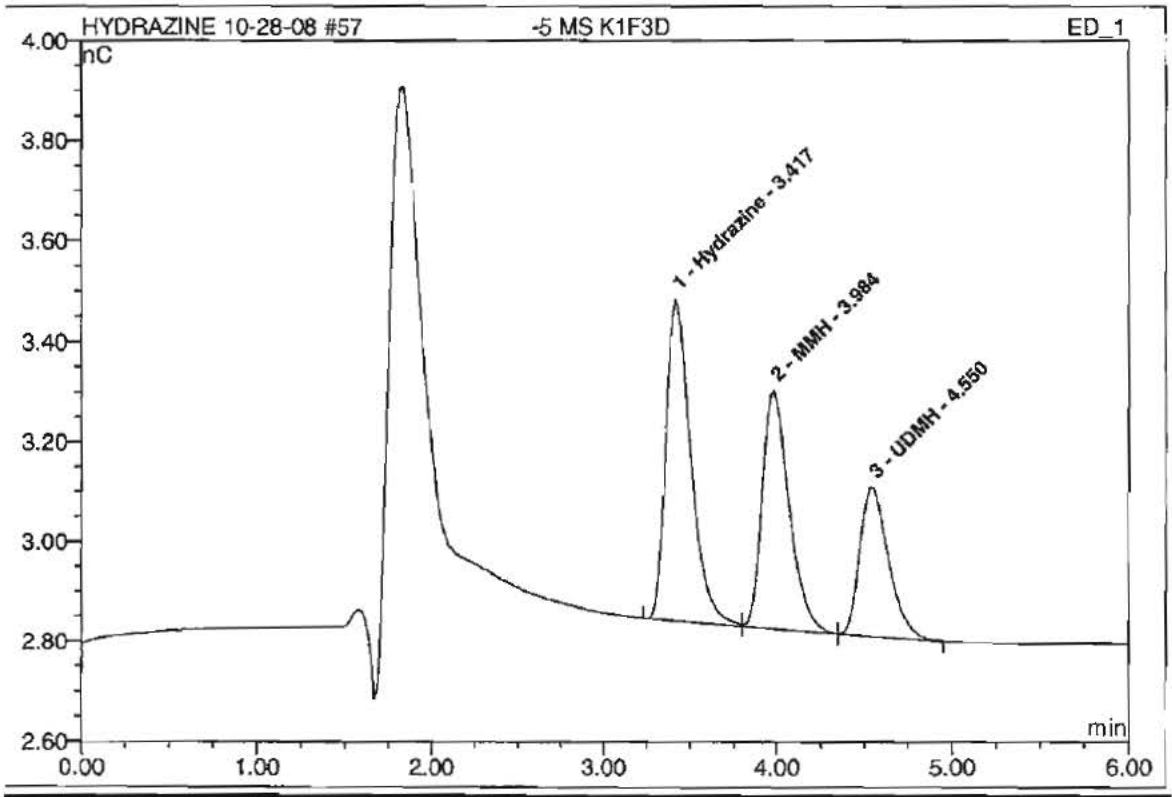
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**48**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 0:20**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	9.122	3.542	88.32	n.a.	BM
2	4.25	MMH	0.961	0.469	11.68	129.58	MB
Total:			10.083	4.01096	100.00	129.584	

57 -5 MS K1F3D

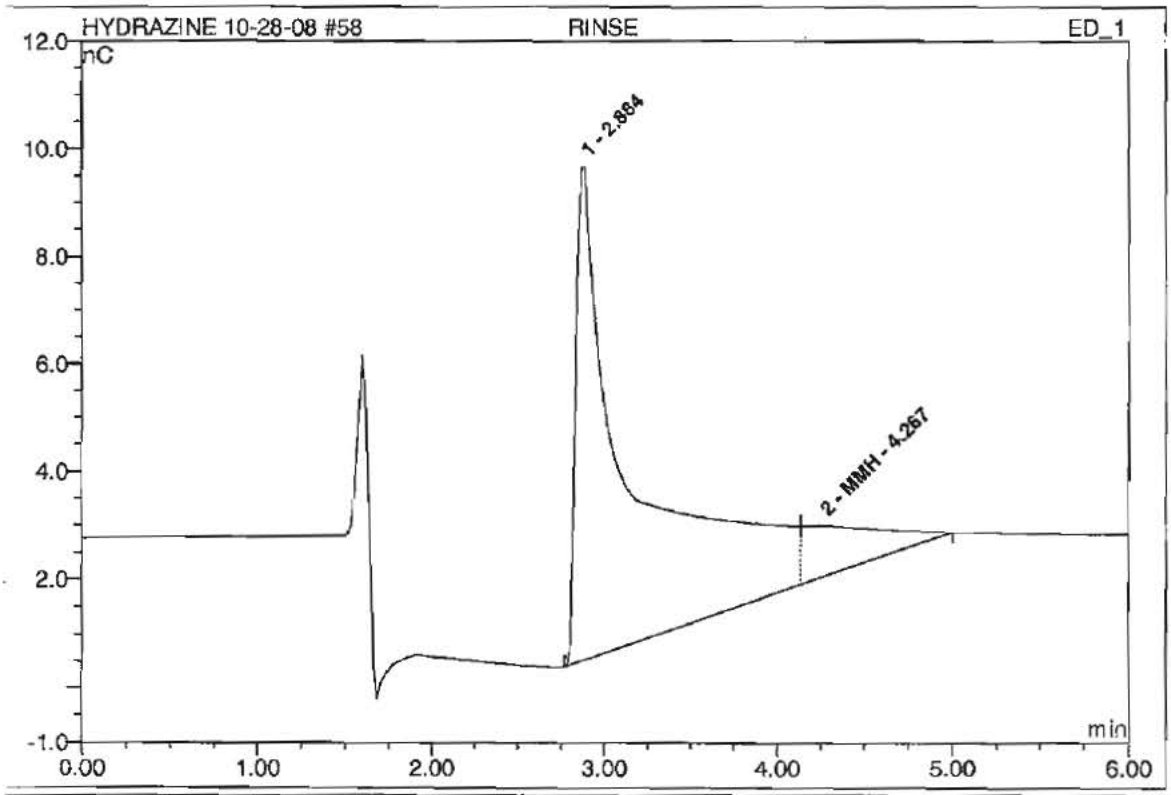
Sample Name:	**-5 MS K1F3D**	*Injection Volume:*	**200.0**
Vial Number:	**24**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 0:29**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.42	Hydrazine	0.643	0.107	42.93	26.63	BM
2	3.98	MMH	0.478	0.085	33.92	23.51	Mb
3	4.55	UDMH	0.300	0.058	23.15	48.54	bMB
Total:			1.420	0.25024	100.00	98.678	

58 RINSE

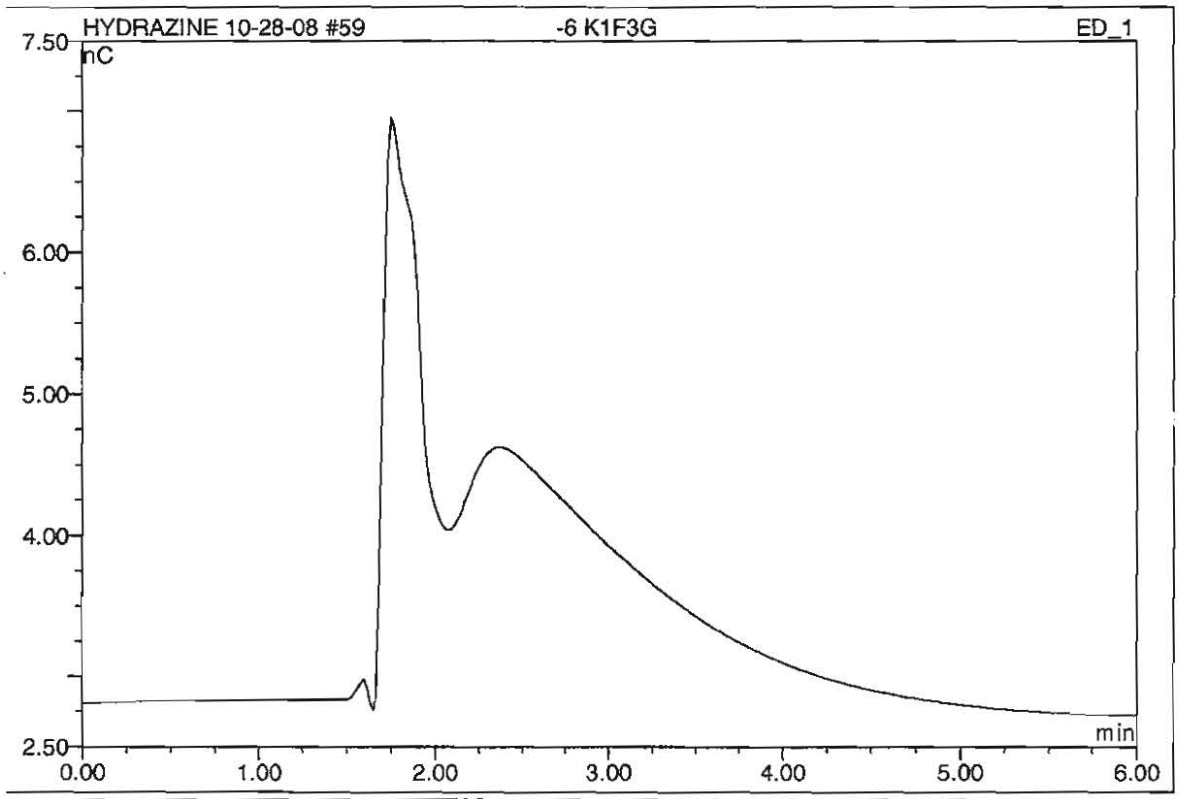
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**49**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 0:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.88	n.a.	9.142	3.540	88.29	n.a.	BM
2	4.27	MMH	0.941	0.469	11.71	129.79	MB
Total:			10.083	4.00921	100.00	129.794	

59 -6 K1F3G

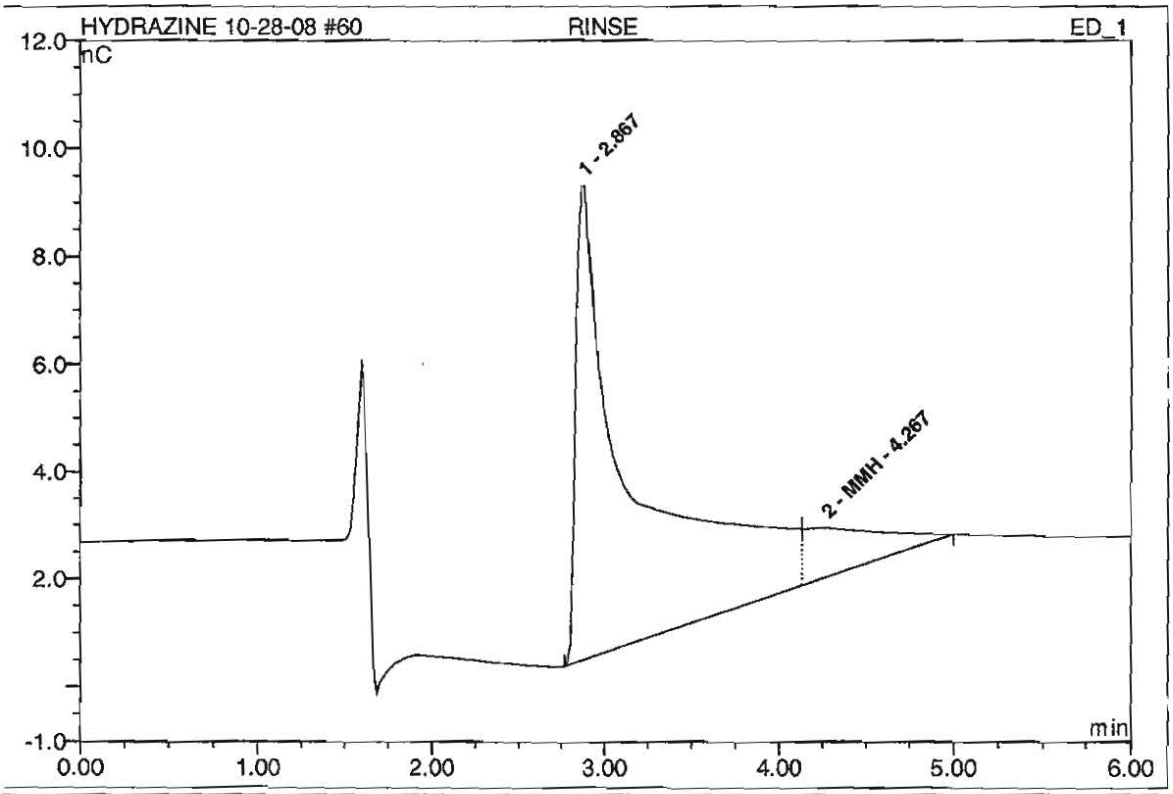
Sample Name:	**-6 K1F3G**	*Injection Volume:*	**200.0**
Vial Number:	**25**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 0:46**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

60 RINSE

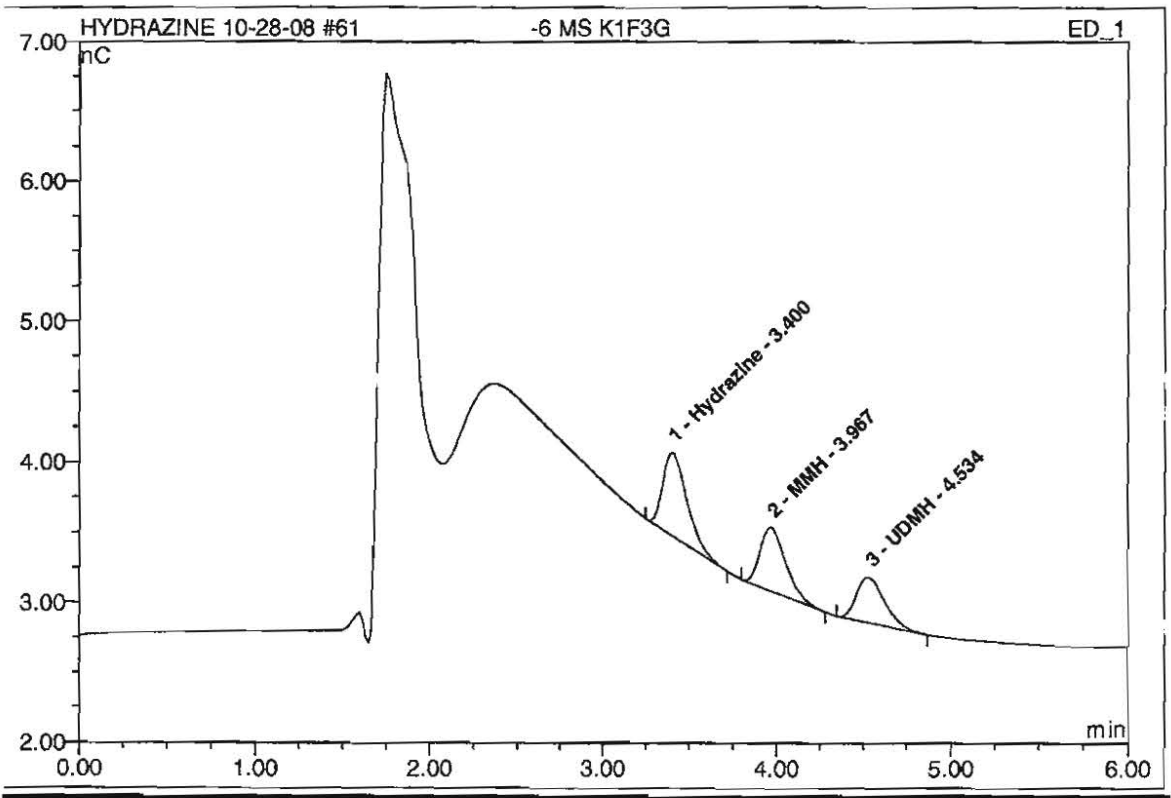
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**45**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 0:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	8.811	3.482	88.32	n.a.	BM
2	4.27	MMH	0.923	0.461	11.68	127.37	MB
Total:			9.735	3.94296	100.00	127.375	

61 -6 MS K1F3G

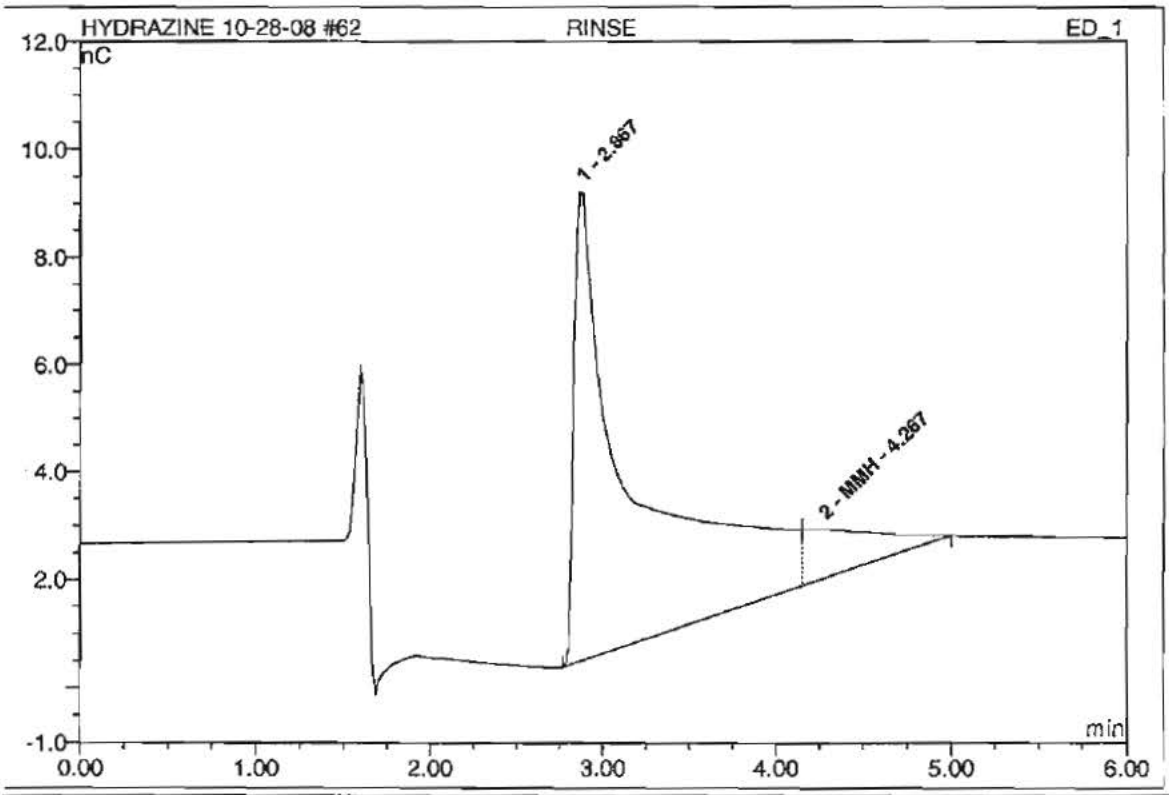
Sample Name:	**-6 MS K1F3G**	*Injection Volume:*	**200.0**
Vial Number:	**26**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 1:03**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.40	Hydrazine	0.590	0.095	40.99	23.81	BMB
2	3.97	MMH	0.451	0.077	32.95	21.27	BMB
3	4.53	UDMH	0.326	0.061	26.06	50.94	BMB
Total:			1.367	0.23299	100.00	96.011	

62 RINSE

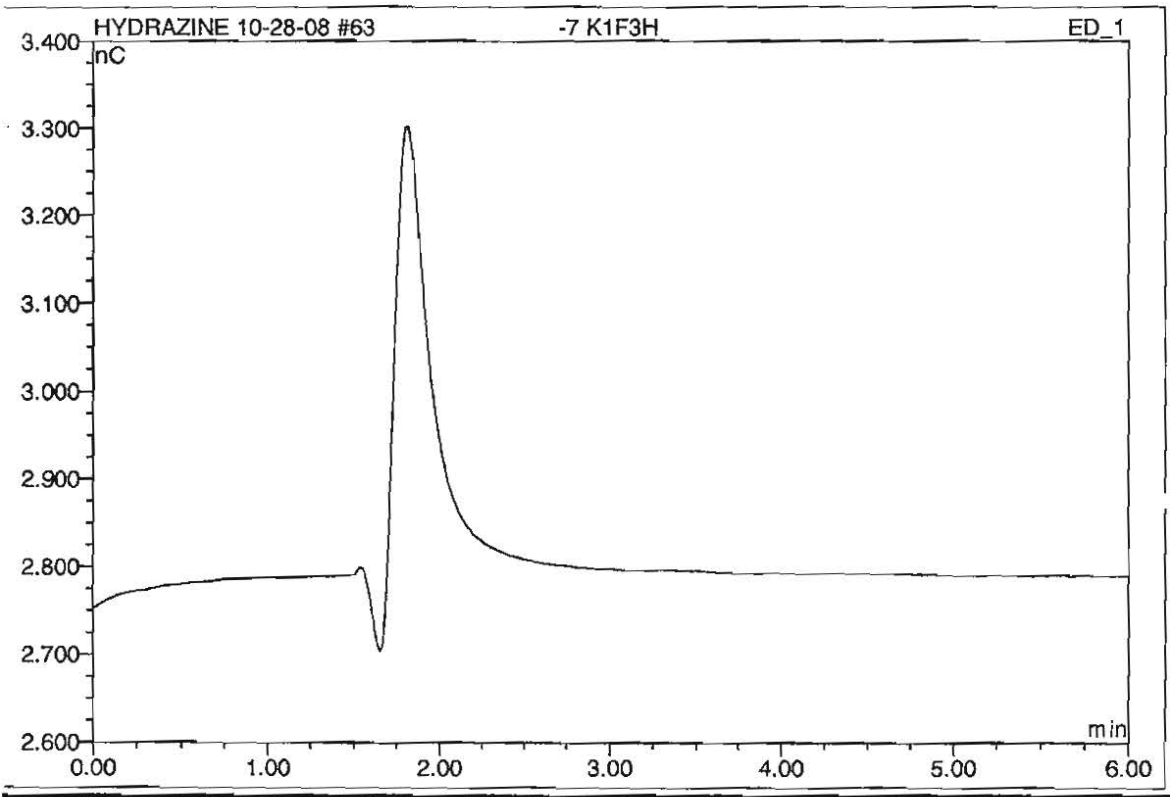
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**46**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 1:12**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	8.718	3.492	88.77	n.a.	BM
2	4.27	MMH	0.920	0.442	11.23	122.16	MB
Total:			9.638	3.93388	100.00	122.156	

63 -7 K1F3H

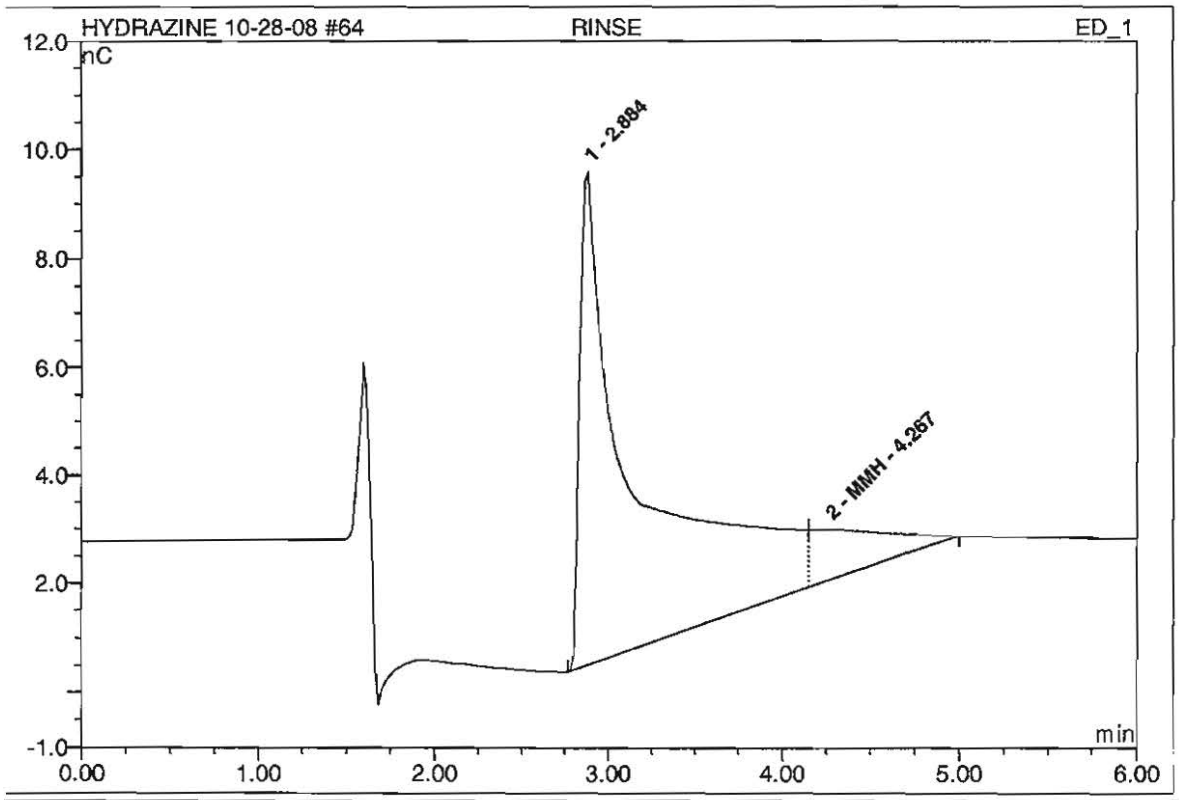
Sample Name:	**-7 K1F3H**	*Injection Volume:*	**200.0**
Vial Number:	**27**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 1:21**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

64 RINSE

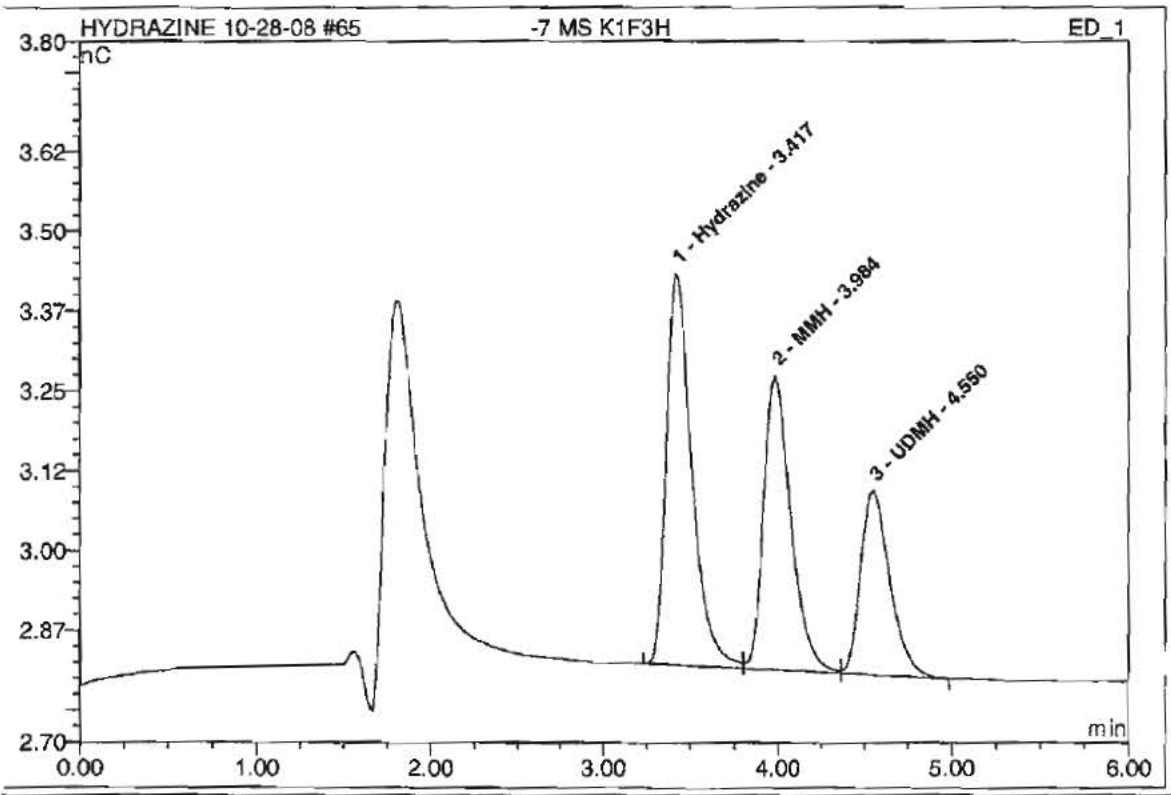
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**47**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 1:29**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.88	n.a.	9.066	3.539	88.68	n.a.	BM
2	4.27	MMH	0.938	0.452	11.32	124.90	MB
Total:			10.005	3.99059	100.00	124.896	

65 -7 MS K1F3H

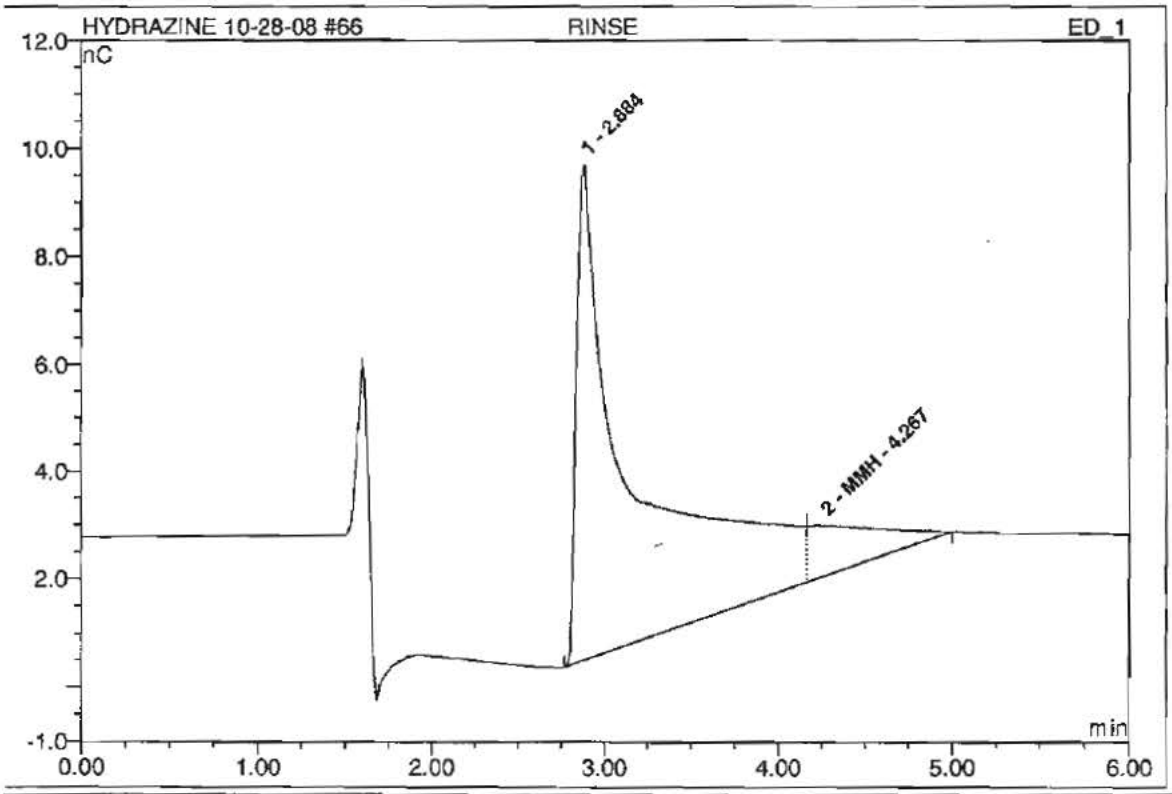
Sample Name:	**-7 MS K1F3H**	*Injection Volume:*	**200.0**
Vial Number:	**28**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 1:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.42	Hydrazine	0.612	0.104	42.64	25.83	BM
2	3.98	MMH	0.461	0.084	34.30	23.18	M
3	4.55	UDMH	0.289	0.056	23.06	47.11	MB
Total:			1.362	0.24398	100.00	96.115	

66 RINSE

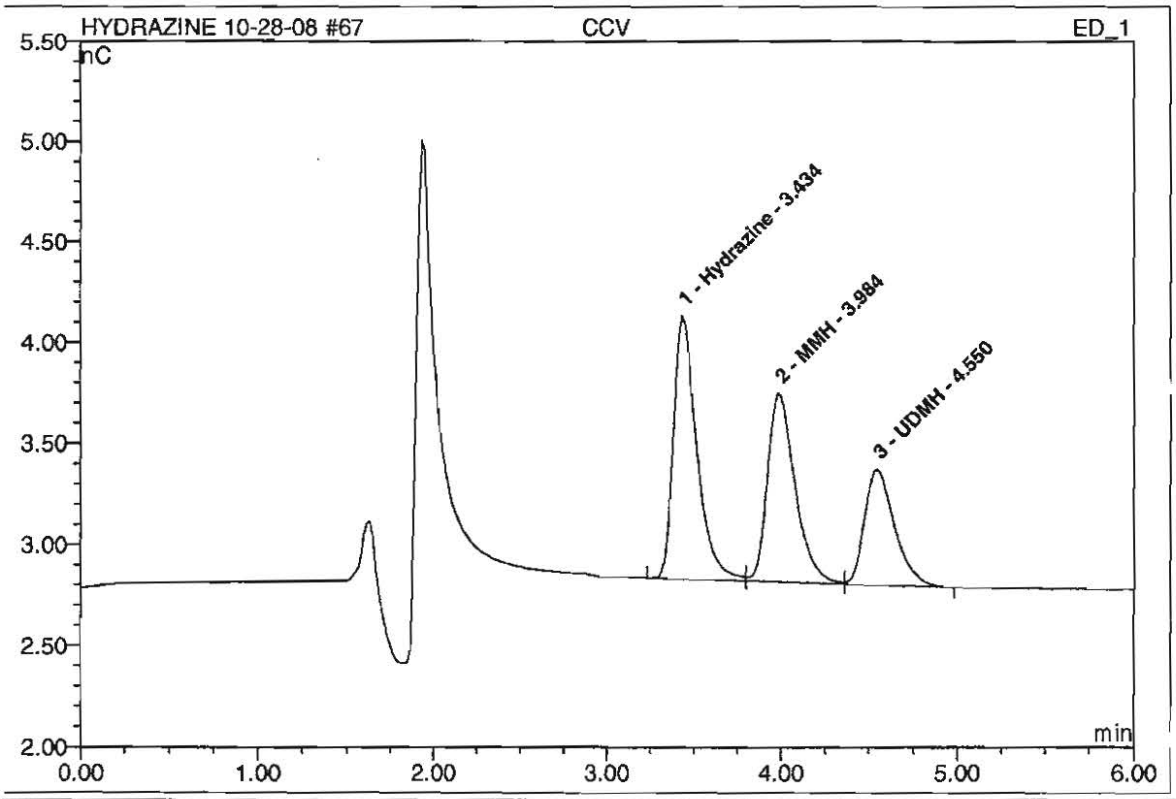
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**48**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 1:47**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.88	n.a.	9.172	3.563	89.11	n.a.	BM
2	4.27	MMH	0.940	0.435	10.89	120.37	MB
Total:			10.112	3.99784	100.00	120.373	

67 CCV

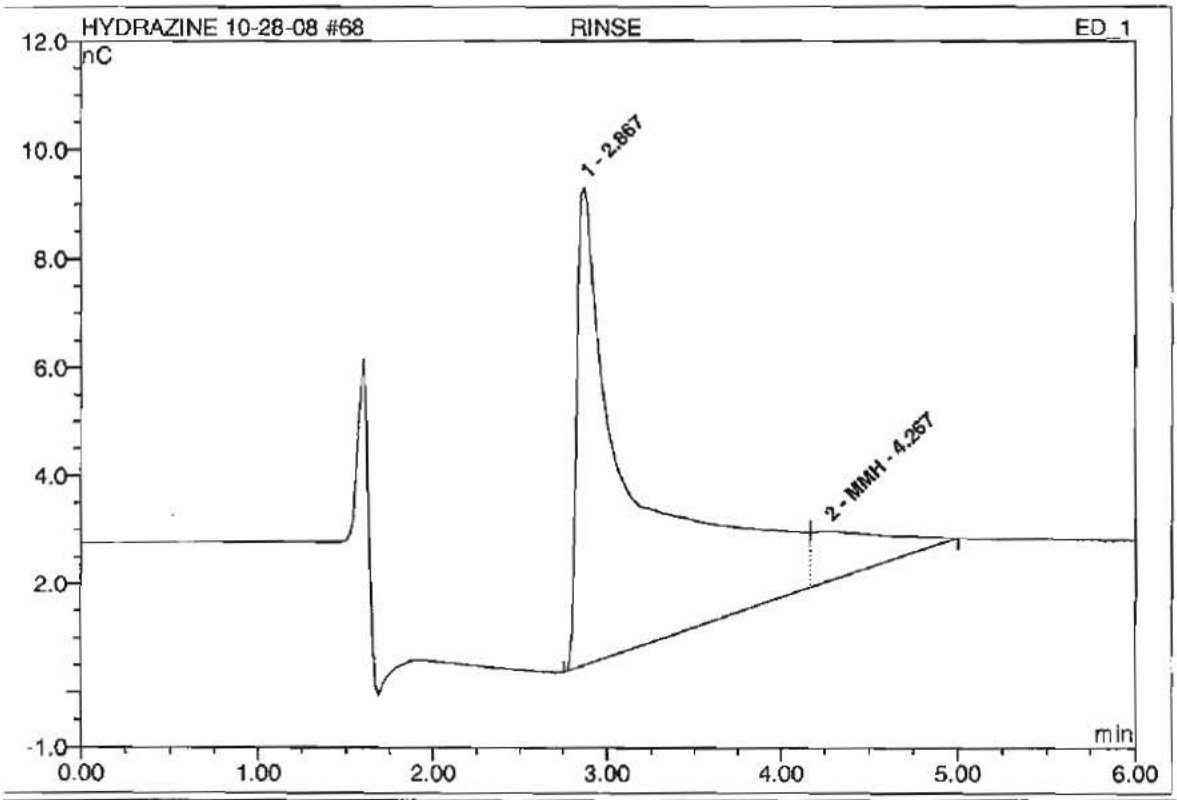
Sample Name:	**CCV**	*Injection Volume:*	**200.0**
Vial Number:	**9**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 1:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	3.43	Hydrazine	1.298	0.200	41.32	48.49	BM
2	3.98	MMH	0.932	0.170	35.25	47.17	M
3	4.55	UDMH	0.574	0.113	23.42	95.96	MB
Total:			2.805	0.48347	100.00	191.615	

68 RINSE

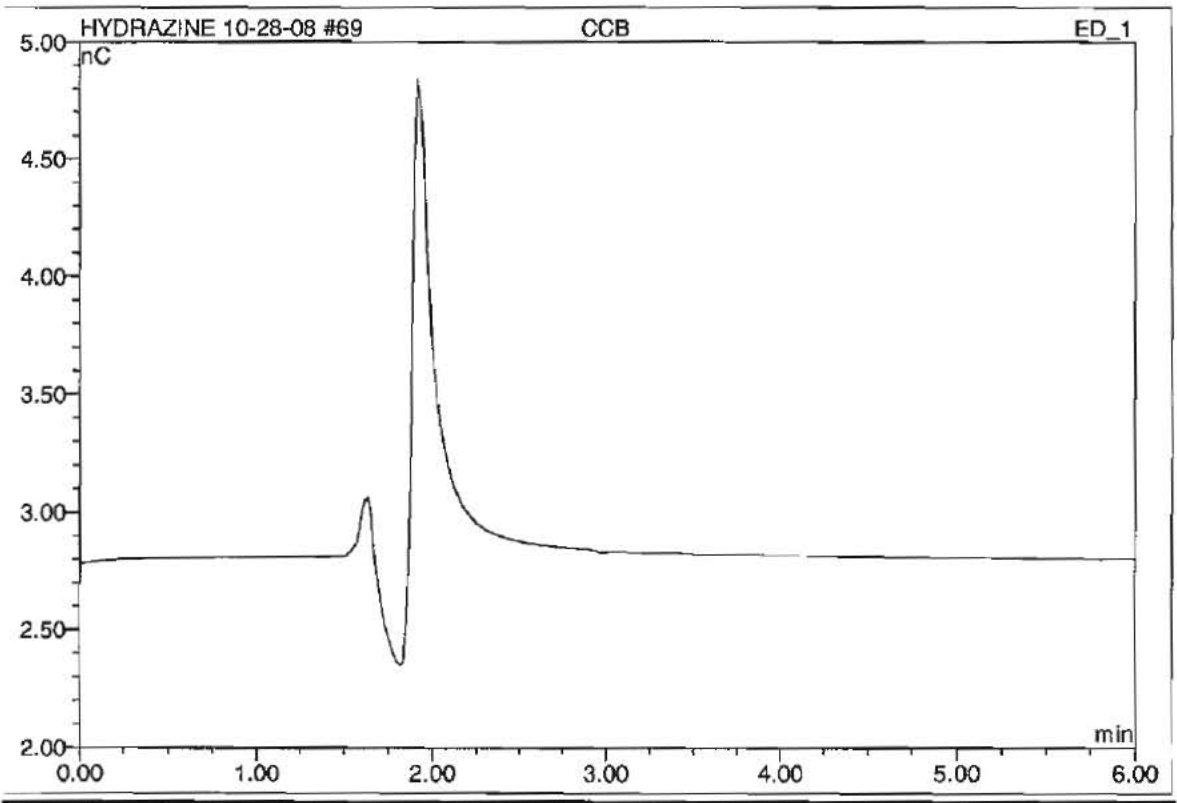
Sample Name:	**RINSE**	*Injection Volume:*	**200.0**
Vial Number:	**49**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 2:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
1	2.87	n.a.	8.789	3.555	89.19	n.a.	BM
2	4.27	MMH	0.932	0.431	10.81	119.19	MB
Total:			9.721	3.98574	100.00	119.185	

69 CCB

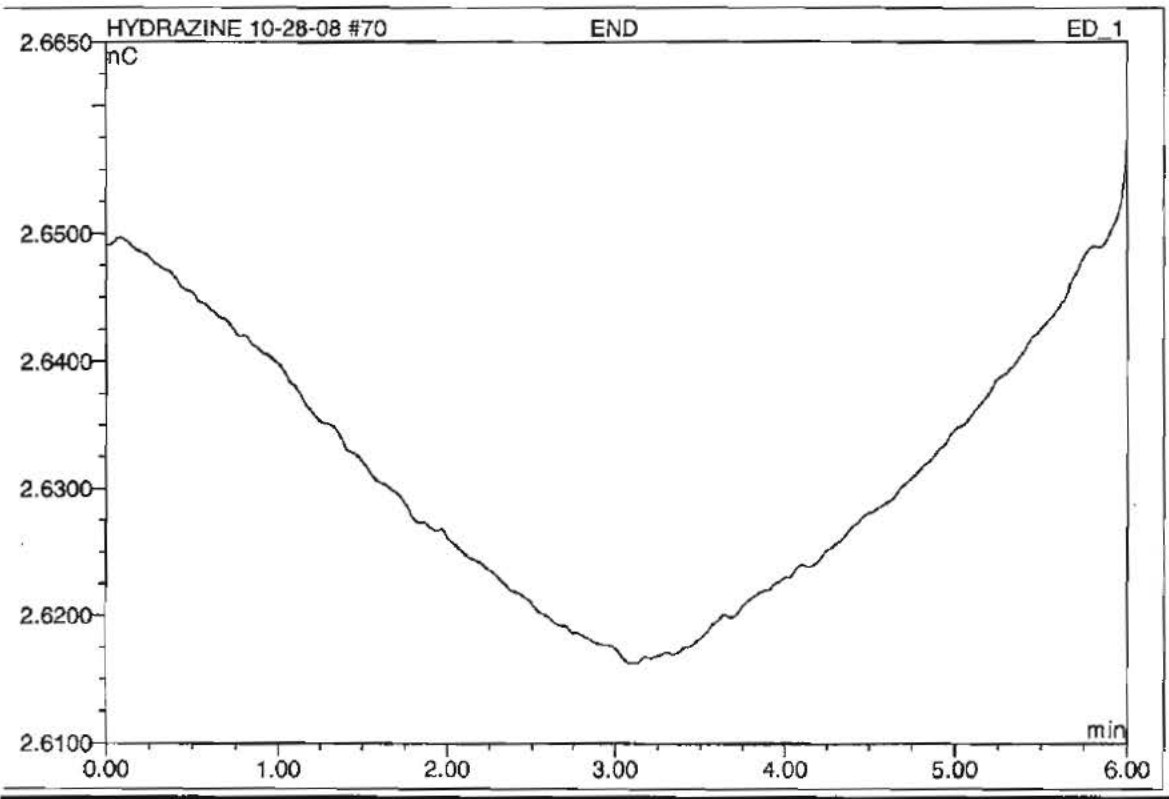
Sample Name:	**CCB**	*Injection Volume:*	**200.0**
Vial Number:	**8**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Hydrazine**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 2:13**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

70 END

Sample Name:	**END**	*Injection Volume:*	**200.0**
Vial Number:	**45**	*Channel:*	**ED_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Low Flow**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Hydrazine Method 031308**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/29/2008 2:21**	*Sample Weight:*	**1.0000**
Run Time (min):	**6.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height nC	Area nC*min	Rel.Area %	Amount	Type
Total:			0.000	0.00000	0.00	0.000	

Hydrazine Standards
Updated 6/10/08

SOP: DV-WC-0077 Rev 1

Analyte:	**ICV**	**CAL/LCS/CCV/MS/SD**
Hydrazine(HZ)		
Source:	Acros	Aldrich
	Lot A0098250	Lot 03703AD
	100 ppb	100 ppb
Verif #:	STD3179-06	STD3176-06
Expires:	11/1/08	11/1/08
Monomethylhydrazine (MMH):		
Source:	Acros	Aldrich
	Lot A019162901	Lot 08125DD
	1000 ppb	100 ppb
Verif #:	std 3180-06	STD3177-06
Expires:	11/1/08	11/1/08
1,1 dimethylhydrazine (UDMH)		
Source:	Aldrich	Aldrich
	Lot 12810MD	Lot 2012LA
	100 ppb	100 ppb
Verif #:	STD3178-06	STD3178-06
Expires:	11/1/08	6/1/09

QC Standard Values

Analyte	ICV True Value	LCS/CCV True Value	MS/SD True Value
HZ	25 ppb	50 ppb	20 ppb * __DF
MMH	25 ppb	50 ppb	20 ppb * __DF
UDMH	50 ppb	100 ppb	40 ppb * __ DF

Sequence: HYDRAZINE 10-28-08
Operator: davisr
Printed: 10/29/2008 8:43:08 AM

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data
Timebase: IC9
#Samples: 70

Created: 10/28/2008 2:58:09 PM by davisr
Last Update: 10/29/2008 8:40:28 AM by davisr

No.	Name	Type	Pos.	Inj. Vol.	Program	Method	Status
1	RT	Unknown	6	200.0	Hydrazine	Hydrazine Method 031308	Finished
2	RINSE	Unknown	45	200.0	Hydrazine	Hydrazine Method 031308	Finished
3	RINSE	Unknown	46	200.0	Hydrazine	Hydrazine Method 031308	Finished
4	RT CHECK	Unknown	6	200.0	Hydrazine	Hydrazine Method 031308	Finished
5	RINSE	Unknown	47	200.0	Hydrazine	Hydrazine Method 031308	Finished
6	RINSE	Unknown	48	200.0	Hydrazine	Hydrazine Method 031308	Finished
7	CAL 5ppb/10ppb	Standard	1	200.0	Hydrazine	Hydrazine Method 031308	Finished
8	RINSE	Unknown	49	200.0	Hydrazine	Hydrazine Method 031308	Finished
9	CAL 10ppb/20ppb	Standard	2	200.0	Hydrazine	Hydrazine Method 031308	Finished
10	RINSE	Unknown	45	200.0	Hydrazine	Hydrazine Method 031308	Finished
11	CAL 20ppb/40ppb	Standard	3	200.0	Hydrazine	Hydrazine Method 031308	Finished
12	RINSE	Unknown	46	200.0	Hydrazine	Hydrazine Method 031308	Finished
13	CAL 50ppb/100ppb	Standard	4	200.0	Hydrazine	Hydrazine Method 031308	Finished
14	RINSE	Unknown	47	200.0	Hydrazine	Hydrazine Method 031308	Finished
15	CAL 80ppb/160ppb	Standard	5	200.0	Hydrazine	Hydrazine Method 031308	Finished
16	RINSE	Unknown	48	200.0	Hydrazine	Hydrazine Method 031308	Finished
17	CAL 100ppb/200ppb	Standard	6	200.0	Hydrazine	Hydrazine Method 031308	Finished
18	RINSE	Unknown	49	200.0	Hydrazine	Hydrazine Method 031308	Finished
19	ICV 25ppb/50ppb	Unknown	7	200.0	Hydrazine	Hydrazine Method 031308	Finished
20	RINSE	Unknown	45	200.0	Hydrazine	Hydrazine Method 031308	Finished
21	ICB	Unknown	8	200.0	Hydrazine	Hydrazine Method 031308	Finished
22	RINSE	Unknown	46	200.0	Hydrazine	Hydrazine Method 031308	Finished
23	DCS-1 50ppb/100ppb	Unknown	9	200.0	Hydrazine	Hydrazine Method 031308	Finished
24	RINSE	Unknown	47	200.0	Hydrazine	Hydrazine Method 031308	Finished
25	DCS-2 50ppb/100ppb	Unknown	10	200.0	Hydrazine	Hydrazine Method 031308	Finished
26	RINSE	Unknown	48	200.0	Hydrazine	Hydrazine Method 031308	Finished
27	MB	Unknown	11	200.0	Hydrazine	Hydrazine Method 031308	Finished
28	RINSE	Unknown	49	200.0	Hydrazine	Hydrazine Method 031308	Finished
29	-1 D8J270156 K1N7M	Unknown	12	200.0	Hydrazine	Hydrazine Method 031308	Finished
30	RINSE	Unknown	45	200.0	Hydrazine	Hydrazine Method 031308	Finished
31	-1 K1N7M MS	Unknown	13	200.0	Hydrazine	Hydrazine Method 031308	Finished
32	RINSE	Unknown	46	200.0	Hydrazine	Hydrazine Method 031308	Finished
33	-1 K1N7M MSD	Unknown	14	200.0	Hydrazine	Hydrazine Method 031308	Finished
34	RINSE	Unknown	47	200.0	Hydrazine	Hydrazine Method 031308	Finished
35	CCV	Unknown	10	200.0	Hydrazine	Hydrazine Method 031308	Finished
36	RINSE	Unknown	48	200.0	Hydrazine	Hydrazine Method 031308	Finished
37	CCB	Unknown	11	200.0	Hydrazine	Hydrazine Method 031308	Finished
38	RINSE	Unknown	49	200.0	Hydrazine	Hydrazine Method 031308	Finished
39	-1 D8J230221 K1F24	Unknown	15	200.0	Hydrazine	Hydrazine Method 031308	Finished
40	RINSE	Unknown	45	200.0	Hydrazine	Hydrazine Method 031308	Finished
41	-1 MS K1F24	Unknown	16	200.0	Hydrazine	Hydrazine Method 031308	Finished
42	RINSE	Unknown	46	200.0	Hydrazine	Hydrazine Method 031308	Finished

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Location: IC9\Data
Timebase: IC9
#Samples: 70
Created: 10/28/2008 2:58:09 PM by davisr
Last Update: 10/29/2008 8:40:28 AM by davisr

No.	Name	Inj. Date/Time	Weight	Dil. Factor	ISTD Amount	Sample ID	Replicate ID	Comment
1	RT	10/28/2008 4:23:56 PM	1.0000	1.0000	1.0000		01	
2	RINSE	10/28/2008 4:32:36 PM	1.0000	1.0000	1.0000		01	
3	RINSE	10/28/2008 4:41:16 PM	1.0000	1.0000	1.0000		01	
4	RT CHECK	10/28/2008 4:49:56 PM	1.0000	1.0000	1.0000		01	
5	RINSE	10/28/2008 4:58:36 PM	1.0000	1.0000	1.0000		01	
6	RINSE	10/28/2008 5:07:16 PM	1.0000	1.0000	1.0000		02	
7	CAL 5ppb/10ppb	10/28/2008 5:15:56 PM	1.0000	1.0000	1.0000		03	
8	RINSE	10/28/2008 5:24:36 PM	1.0000	1.0000	1.0000		04	
9	CAL 10ppb/20ppb	10/28/2008 5:33:16 PM	1.0000	1.0000	1.0000		05	
10	RINSE	10/28/2008 5:41:56 PM	1.0000	1.0000	1.0000		06	
11	CAL 20ppb/40ppb	10/28/2008 5:50:36 PM	1.0000	1.0000	1.0000		07	
12	RINSE	10/28/2008 5:59:16 PM	1.0000	1.0000	1.0000		08	
13	CAL 50ppb/100ppb	10/28/2008 6:07:56 PM	1.0000	1.0000	1.0000		08	
14	RINSE	10/28/2008 6:16:36 PM	1.0000	1.0000	1.0000		08	
15	CAL 80ppb/160ppb	10/28/2008 6:25:16 PM	1.0000	1.0000	1.0000		08	
16	RINSE	10/28/2008 6:33:56 PM	1.0000	1.0000	1.0000		08	
17	CAL 100ppb/200ppb	10/28/2008 6:42:36 PM	1.0000	1.0000	1.0000		08	
18	RINSE	10/28/2008 6:51:16 PM	1.0000	1.0000	1.0000		08	
19	ICV 25ppb/50ppb	10/28/2008 6:59:56 PM	1.0000	1.0000	1.0000		08	
20	RINSE	10/28/2008 7:08:36 PM	1.0000	1.0000	1.0000		08	
21	ICB	10/28/2008 7:17:16 PM	1.0000	1.0000	1.0000		08	
22	RINSE	10/28/2008 7:25:56 PM	1.0000	1.0000	1.0000		08	
23	DCS-1 50ppb/100ppb	10/28/2008 7:34:36 PM	1.0000	1.0000	1.0000		08	
24	RINSE	10/28/2008 7:43:16 PM	1.0000	1.0000	1.0000		08	
25	DCS-2 50ppb/100ppb	10/28/2008 7:51:56 PM	1.0000	1.0000	1.0000		08	
26	RINSE	10/28/2008 8:00:36 PM	1.0000	1.0000	1.0000		08	
27	MB	10/28/2008 8:09:16 PM	1.0000	1.0000	1.0000		08	
28	RINSE	10/28/2008 8:17:56 PM	1.0000	1.0000	1.0000		08	
29	-1 D8J270156 K1N7M	10/28/2008 8:26:36 PM	1.0000	1.0000	1.0000		08	
30	RINSE	10/28/2008 8:35:16 PM	1.0000	1.0000	1.0000		08	
31	-1 K1N7M MS	10/28/2008 8:43:56 PM	1.0000	1.0000	1.0000		08	
32	RINSE	10/28/2008 8:52:36 PM	1.0000	1.0000	1.0000		08	
33	-1 K1N7M MSD	10/28/2008 9:01:16 PM	1.0000	1.0000	1.0000		08	
34	RINSE	10/28/2008 9:09:56 PM	1.0000	1.0000	1.0000		08	
35	CCV	10/28/2008 9:18:36 PM	1.0000	1.0000	1.0000		08	
36	RINSE	10/28/2008 9:27:16 PM	1.0000	1.0000	1.0000		08	
37	CCB	10/28/2008 9:35:56 PM	1.0000	1.0000	1.0000		08	
38	RINSE	10/28/2008 9:44:36 PM	1.0000	1.0000	1.0000		08	
39	-1 D8J230221 K1F24	10/28/2008 9:53:16 PM	1.0000	1.0000	1.0000		08	
40	RINSE	10/28/2008 10:01:56 PM	1.0000	1.0000	1.0000		08	
41	-1 MS K1F24	10/28/2008 10:10:36 PM	1.0000	1.0000	1.0000		08	
42	RINSE	10/28/2008 10:19:16 PM	1.0000	1.0000	1.0000		08	

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data
Timebase: IC9 Created: 10/28/2008 2:58:09 PM by davisr
#Samples: 70 Last Update: 10/29/2008 8:40:28 AM by davisr

No.	Name	Type	Pos.	Inj. Vol.	Program	Method	Status
43	-2 K1F26	Unknown	17	200.0	Hydrazine	Hydrazine Method 031308	Finished
44	RINSE	Unknown	47	200.0	Hydrazine	Hydrazine Method 031308	Finished
45	-2 MS K1F26	Unknown	18	200.0	Hydrazine	Hydrazine Method 031308	Finished
46	RINSE	Unknown	48	200.0	Hydrazine	Hydrazine Method 031308	Finished
47	-3 K1F28	Unknown	19	200.0	Hydrazine	Hydrazine Method 031308	Finished
48	RINSE	Unknown	49	200.0	Hydrazine	Hydrazine Method 031308	Finished
49	-3 MS K1F28	Unknown	20	200.0	Hydrazine	Hydrazine Method 031308	Finished
50	RINSE	Unknown	45	200.0	Hydrazine	Hydrazine Method 031308	Finished
51	-4 K1F29	Unknown	21	200.0	Hydrazine	Hydrazine Method 031308	Finished
52	RINSE	Unknown	46	200.0	Hydrazine	Hydrazine Method 031308	Finished
53	-4 MS K1F29	Unknown	22	200.0	Hydrazine	Hydrazine Method 031308	Finished
54	RINSE	Unknown	47	200.0	Hydrazine	Hydrazine Method 031308	Finished
55	-5 K1F3D	Unknown	23	200.0	Hydrazine	Hydrazine Method 031308	Finished
56	RINSE	Unknown	48	200.0	Hydrazine	Hydrazine Method 031308	Finished
57	-5 MS K1F3D	Unknown	24	200.0	Hydrazine	Hydrazine Method 031308	Finished
58	RINSE	Unknown	49	200.0	Hydrazine	Hydrazine Method 031308	Finished
59	-6 K1F3G	Unknown	25	200.0	Hydrazine	Hydrazine Method 031308	Finished
60	RINSE	Unknown	45	200.0	Hydrazine	Hydrazine Method 031308	Finished
61	-6 MS K1F3G	Unknown	26	200.0	Hydrazine	Hydrazine Method 031308	Finished
62	RINSE	Unknown	46	200.0	Hydrazine	Hydrazine Method 031308	Finished
63	-7 K1F3H	Unknown	27	200.0	Hydrazine	Hydrazine Method 031308	Finished
64	RINSE	Unknown	47	200.0	Hydrazine	Hydrazine Method 031308	Finished
65	-7 MS K1F3H	Unknown	28	200.0	Hydrazine	Hydrazine Method 031308	Finished
66	RINSE	Unknown	48	200.0	Hydrazine	Hydrazine Method 031308	Finished
67	CCV	Unknown	9	200.0	Hydrazine	Hydrazine Method 031308	Finished
68	RINSE	Unknown	49	200.0	Hydrazine	Hydrazine Method 031308	Finished
69	CCB	Unknown	8	200.0	Hydrazine	Hydrazine Method 031308	Finished
70	END	Unknown	45	200.0	Low Flow	Hydrazine Method 031308	Finished

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data
Timebase: IC9
#Samples: 70
Created: 10/28/2008 2:58:09 PM by davisr
Last Update: 10/29/2008 8:40:28 AM by davisr

No.	Name	Inj. Date/Time	Weight	Dil. Factor	ISTD Amount	Sample ID	Replicate ID	Comment
43	-2 K1F26	10/28/2008 10:27:56 PM	1.0000	1.0000	1.0000		08	
44	RINSE	10/28/2008 10:36:36 PM	1.0000	1.0000	1.0000		08	
45	-2 MS K1F26	10/28/2008 10:45:16 PM	1.0000	1.0000	1.0000		08	
46	RINSE	10/28/2008 10:53:56 PM	1.0000	1.0000	1.0000		08	
47	-3 K1F28	10/28/2008 11:02:36 PM	1.0000	1.0000	1.0000		08	
48	RINSE	10/28/2008 11:11:16 PM	1.0000	1.0000	1.0000		08	
49	-3 MS K1F28	10/28/2008 11:19:56 PM	1.0000	1.0000	1.0000		08	
50	RINSE	10/28/2008 11:28:36 PM	1.0000	1.0000	1.0000		08	
51	-4 K1F29	10/28/2008 11:37:16 PM	1.0000	1.0000	1.0000		08	
52	RINSE	10/28/2008 11:45:56 PM	1.0000	1.0000	1.0000		08	
53	-4 MS K1F29	10/28/2008 11:54:36 PM	1.0000	1.0000	1.0000		08	
54	RINSE	10/29/2008 12:03:16 AM	1.0000	1.0000	1.0000		08	
55	-5 K1F3D	10/29/2008 12:11:56 AM	1.0000	1.0000	1.0000		08	
56	RINSE	10/29/2008 12:20:36 AM	1.0000	1.0000	1.0000		08	
57	-5 MS K1F3D	10/29/2008 12:29:16 AM	1.0000	1.0000	1.0000		08	
58	RINSE	10/29/2008 12:37:56 AM	1.0000	1.0000	1.0000		08	
59	-6 K1F3G	10/29/2008 12:46:36 AM	1.0000	1.0000	1.0000		08	
60	RINSE	10/29/2008 12:55:16 AM	1.0000	1.0000	1.0000		08	
61	-6 MS K1F3G	10/29/2008 1:03:56 AM	1.0000	1.0000	1.0000		08	
62	RINSE	10/29/2008 1:12:36 AM	1.0000	1.0000	1.0000		08	
63	-7 K1F3H	10/29/2008 1:21:16 AM	1.0000	1.0000	1.0000		08	
64	RINSE	10/29/2008 1:29:56 AM	1.0000	1.0000	1.0000		08	
65	-7 MS K1F3H	10/29/2008 1:38:36 AM	1.0000	1.0000	1.0000		08	
66	RINSE	10/29/2008 1:47:16 AM	1.0000	1.0000	1.0000		08	
67	CCV	10/29/2008 1:55:56 AM	1.0000	1.0000	1.0000		08	
68	RINSE	10/29/2008 2:04:36 AM	1.0000	1.0000	1.0000		08	
69	CCB	10/29/2008 2:13:16 AM	1.0000	1.0000	1.0000		08	
70	END	10/29/2008 2:21:56 AM	1.0000	1.0000	1.0000		08	

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ Created: 3/13/2008 12:55:41 PM by Test America Labs
Timebase: IC9 Changed: 3/13/2008 12:55:41 PM by Test America Labs

```
            Sampler.AcquireExclusiveAccess
            Column_TC.AcquireExclusiveAccess
            Compartment_TC.AcquireExclusiveAccess
            Pressure.LowerLimit =                0 [psi]
            Pressure.UpperLimit =                3500 [psi]
            MaximumFlowRamp =                    6.00 [ml/min²]
            %A.Equate =                          "100"
            %B.Equate =                          "%B"
            %C.Equate =                          "%C"
            %D.Equate =                          "%D"
            Flush                                Volume = 250
            Wait                                 FlushState
            NeedleHeight =                       2 [mm]
            CutSegmentVolume =                   10 [µl]
            SyringeSpeed =                       4
            CycleTime =                          0 [min]
            WaitForTemperature =                 False
            EDet1.Mode =                         IntAmp
            EDet1.CellControl                    = On
            Data_Collection_Rate =               1.00 [Hz]
            pH.UpperLimit =                      13.00
            pH.LowerLimit =                      3.00
            WaveformName = "Hydrazine"
            WaveformDescription = "Hydrazine"
            Electrode = AgCl
            Waveform Time = 0.000, Potential = 1.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 0.100, Potential = 1.000, GainRegion = On,
Ramp = On, Integration = On
            Waveform Time = 1.850, Potential = 1.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 1.950, Potential = 1.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 1.960, Potential = -2.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 1.980, Potential = 2.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 2.000, Potential = 1.000, GainRegion = Off,
Ramp = On, Integration = Off, LastStep = On
            Flow =                               1.000 [ml/min]
            %B =                                 0.0 [%]
            %C =                                 0.0 [%]
            %D =                                 0.0 [%]
            Curve =                              5
```

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ
Timebase: IC9
Created: 3/13/2008 12:55:41 PM by Test America Labs
Changed: 3/13/2008 12:55:41 PM by Test America Labs

```
          Column_TC.Mode =                    Off
          Compartment_TC.Mode =               Off
          Wait                                SampleReady

0.000     Load
          Wait                                CycleTimeState
          Inject
          Wait                                InjectState
          ED_1.AcqOn
          Sampler.ReleaseExclusiveAccess

6.000     ED_1.AcqOff
          Compartment_TC.ReleaseExclusiveAccess
          Column_TC.ReleaseExclusiveAccess

          End
```

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ
Timebase: IC9
Created: 3/13/2008 12:55:41 PM by Test America Labs
Changed: 3/13/2008 12:55:41 PM by Test America Labs

No.	Channel	Operation	Parameters

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ
Timebase: IC9
Created: 3/13/2008 2:50:37 PM by Test America Labs
Changed: 3/13/2008 2:50:37 PM by Test America Labs

```
            Sampler.AcquireExclusiveAccess
            Column_TC.AcquireExclusiveAccess
            Compartment_TC.AcquireExclusiveAccess
            Pressure.LowerLimit =                0 [psi]
            Pressure.UpperLimit =                3500 [psi]
            MaximumFlowRamp =                    6.00 [ml/min²]
            %A.Equate =                          "100"
            %B.Equate =                          "%B"
            %C.Equate =                          "%C"
            %D.Equate =                          "%D"
            Flush                                Volume = 250
            Wait                                 FlushState
            NeedleHeight =                       2 [mm]
            CutSegmentVolume =                   10 [µl]
            SyringeSpeed =                       4
            CycleTime =                          0 [min]
            WaitForTemperature =                 False
            EDet1.Mode =                         IntAmp
            EDet1.CellControl                    = On
            Data_Collection_Rate =               1.00 [Hz]
            pH.UpperLimit =                      13.00
            pH.LowerLimit =                      3.00
            WaveformName = "Hydrazine"
            WaveformDescription = "Hydrazine"
            Electrode = AgCl
            Waveform Time = 0.000, Potential = 1.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 0.100, Potential = 1.000, GainRegion = On,
Ramp = On, Integration = On
            Waveform Time = 1.850, Potential = 1.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 1.950, Potential = 1.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 1.960, Potential = -2.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 1.980, Potential = 2.000, GainRegion = Off,
Ramp = On, Integration = Off
            Waveform Time = 2.000, Potential = 1.000, GainRegion = Off,
Ramp = On, Integration = Off, LastStep = On
            Flow =                               0.25[ml/min]
            %B =                                 0.0 [%]
            %C =                                 0.0 [%]
            %D =                                 0.0 [%]
            Curve =                              5
```

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ
Timebase: IC9
Created: 3/13/2008 2:50:37 PM by Test America Labs
Changed: 3/13/2008 2:50:37 PM by Test America Labs

	Column_TC.Mode =	Off
	Compartment_TC.Mode =	Off
	Wait	SampleReady
0.000	Load	
	Wait	CycleTimeState
	Inject	
	Wait	InjectState
	ED_1.AcqOn	
	Sampler.ReleaseExclusiveAccess	
6.000	ED_1.AcqOff	
	Compartment_TC.ReleaseExclusiveAccess	
	Column_TC.ReleaseExclusiveAccess	
	End	

Title:
Datasource: DBSBHGF1_local
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ
Timebase: IC9
Created: 3/13/2008 2:50:37 PM by Test America Labs
Changed: 3/13/2008 2:50:37 PM by Test America Labs

No.	Channel	Operation	Parameters

Title: Hydrazine Method 031308

Datasource:	DBSBHGF1_local	Created:	3/13/2008 3:20:13 PM by Test America Labs
Location:	IC9\Data\HYDRAZINE 10-28-08.SEQ	Last Update:	4/18/2008 10:23:44 AM by tikarc

Blank Run Subtraction: No Blank Run Subtraction

Detection Table:

No.	Ret. Time [min]	Param. Name	Param. Value	Channel
1	0.000	Minimum Area	0.5E-4 "[Signal]*min"	All Channels
2	0.000	Inhibit Integration	On	All Channels
3	2.750	Inhibit Integration	Off	All Channels
4	5.000	Inhibit Integration	On	All Channels

Title: Hydrazine Method 031308
Datasource: DBSBHGF1_local Created: 3/13/2008 3:20:13 PM by Test America Labs
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ Last Update: 4/18/2008 10:23:44 AM by likarc

Peak Table:

Use Recently Detected Retention Times: Average of last 10 samples
Peak Retention Time Determination: Absolute
Dead time:
Delay Time of 2'nd Detector: <None>
Delay Time of 3'rd Detector: <None>

No.	Peak Name	Ret.Time	Window	Standard	Int.Type	Cal.Type	Peak Type	Group	Comment
1	Hydrazine	3.434 min	0.200 AG	External	Area	XLOff	Main		Autogenerated
2	MMH	3.967 min	0.200 AG	External	Area	XLOff	Main		Autogenerated
3	UDMH	4.517 min	0.200 AG	External	Area	XLOff	Main		Autogenerated

Title: Hydrazine Method 031308
Datasource: DBSBHGF1_local
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ
Created: 3/13/2008 3:20:13 PM by Test America Labs
Last Update: 4/18/2008 10:23:44 AM by likarc

Amount Table:

Dimension of Amounts:
Reference volume for amounts: Use inject volume of first standard
Number of Amount Columns: 6
Sample column used for amount column assignment: Sample Name

No.	Peak Name	Ret.Time	Resp.Fact.	Amount CAL 5ppb/10ppb	Amount CAL 10ppb/20ppb	Amount CAL 20ppb/40ppb	Amount CAL 50ppb/100ppb
1	Hydrazine	3.434 min	1.000000	5.000000	10.000000	20.000000	50.000000
2	MMH	3.967 min	1.000000	5.000000	10.000000	20.000000	50.000000
3	UDMH	4.517 min	1.000000	10.000000	20.000000	40.000000	100.000000

Title: Hydrazine Method 031308
Datasource: DBSBHGF1_local Created: 3/13/2008 3:20:13 PM by Test America Labs
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ Last Update: 4/18/2008 10:23:44 AM by likarc

Amount Table:

Dimension of Amounts:
Reference volume for amounts: Use inject volume of first standard
Number of Amount Columns: 6
Sample column used for amount column assignment: Sample Name

No.	Peak Name	Ret.Time	Amount CAL 80ppb/160ppb	Amount CAL 100ppb/200ppb	Comment
1	Hydrazine	3.434 min	80.000000	100.000000	Autogenerated
2	MMH	3.967 min	80.000000	100.000000	Autogenerated
3	UDMH	4.517 min	160.000000	200.000000	Autogenerated

Title: Hydrazine Method 031308
Datasource: DBSBHGF1_local Created: 3/13/2008 3:20:13 PM by Test America Labs
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ Last Update: 4/18/2008 10:23:44 AM by likarc

Calibration:

Calibration Mode: Total
Auto Recalibrate: On
Curve Fitting Model: Normal
Dual-Column Separate Calibration: Off

No.	Enabled	Name	Smp.No.	Pos.	Inj. Vol.	Weight	ISTD Amount	Dil. Factor	Inj. Date/Time
1	☒	CAL 5	7	1	200.0	1.0000	1.0000	1.0000	10/28/2008 5:1
2	☒	CAL 1	9	2	200.0	1.0000	1.0000	1.0000	10/28/2008 5:3
3	☒	CAL 2	11	3	200.0	1.0000	1.0000	1.0000	10/28/2008 5:5
4	☒	CAL 5	13	4	200.0	1.0000	1.0000	1.0000	10/28/2008 6:0
5	☒	CAL 8	15	5	200.0	1.0000	1.0000	1.0000	10/28/2008 6:2
6	☒	CAL 1	17	6	200.0	1.0000	1.0000	1.0000	10/28/2008 6:4

Title: Hydrazine Method 031308
Datasource: DBSBHGF1_local
Location: IC9\Data\HYDRAZINE 10-28-08.SEQ
Created: 3/13/2008 3:20:13 PM by Test America Labs
Last Update: 4/18/2008 10:23:44 AM by likarc

Calibration:

Calibration Mode: Total
Auto Recalibrate: On
Curve Fitting Model: Normal
Dual-Column Separate Calibration: Off

No.	Enabled	Name	Sample Comment	Calib. Comment
1	☒	CAL 5		Ok
2	☒	CAL 1		Ok
3	☒	CAL 2		Ok
4	☒	CAL 5		Ok
5	☒	CAL 8		Ok
6	☒	CAL 1		Ok

Title: Hydrazine Method 031308

Datasource:	DBSBHGF1_local	Created:	3/13/2008 3:20:13 PM by Test America Labs
Location:	IC9\Data\HYDRAZINE 10-28-08.SEQ	Last Update:	4/18/2008 10:23:44 AM by ilkarc

System Suitability Test:

No.	Name	Sample Condition	Test Condition	Aggregate	Operator	Value	Rounding	Channel	Peak
1									

Title: Hydrazine Method 031308

Datasource:	DBSBHGF1_local	Created:	3/13/2008 3:20:13 PM by Test America Labs
Location:	IC9\Data\HYDRAZINE 10-28-08.SEQ	Last Update:	4/18/2008 10:23:44 AM by likarc

System Suitability Test:

No.	Name	N.A.	Fail-Action	Result	SST Message
1					

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

November 25, 2008

MEMORANDUM

SUBJECT: Data validation report for the Volatile Organic (VOC), Semi-Volatile Organic (SVOC), Organochlorine Pesticide (Pest) and Polychlorinated Biphenyl (PCB) analyses of samples from the Larson Air Force Base Titan Missile Facility S-2 Site Case: 37953 SDG: JAHA4

FROM: Raymond Wu, QA Chemist
Office of Environmental Assessment 11/25/08

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup – Brownfield Unit

CC: Alexis Ande, Project Manager
TechLaw, Inc.

The quality assurance (QA) review of 5 water samples collected from the above referenced site has been completed. The samples were analyzed for VOC, SVOC, Pesticide, and PCB in accordance with USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) for Multi-Concentration Organic Analyses (SOM01.2) by A4 Scientific in The Woodlands, Texas. The following samples were evaluated in this validation report:

SDG: JAHA4

JAHA4	JAHA5	JAH96	JAH97	JAH98

DATA QUALIFICATIONS

The following comments refer to the laboratory performance specification outlined in the Quality Assurance Project Plan (for Larson Air Force Base Titan S-2 Facility Site, WA) dated September, 2008, USEPA CLP SOW for Organic Analysis (SOM01.2, 05/2008), and applicable criteria set forth in the USEPA CLP National Functional Guidelines for Organic Data Review (07/2007). Note that some of the analytical data reported may be qualified based on the professional judgment of the data reviewer.

The conclusions presented herein were based on the information provided for the review.

Holding Time - Acceptable

All of the samples met the extraction, Validated Time of Sample Receipt (VTSR), extraction and analytical holding time criteria for VOC, SVOC, Pesticide and PCB analyses. The samples

were collected on 10/21/08, received by the laboratory on 10/23/08, preserved in hydrochloric acid & ice, analyzed for VOC within 14 days of sample collection & extracted within 7 days of sample collection for the SVOC, Pesticide and PCB. The samples were analyzed for SVOC, Pesticide and PCB within 40 days of sample collection. The cooler temperatures, upon the verified time of sample receipt (VTSR), were at 4°C. That was within the acceptable limits of 2-10 °C. None of the data was qualified on this basis.

Instrument Performance Checks - Acceptable

Two GC & two MS systems were used for the sample analyses which met the performance checks, ion abundance criteria and retention time stability checks. All of the samples were analyzed within acceptable 12-hour QC periods. The instruments used remained stable throughout the course of analyses. None of the data was qualified on this basis.

Initial Calibrations (ICAL)

Volatile

- One Volatile ICAL was evaluated in this report. It met the technical acceptance criteria set forth by the SOW for the percent relative standard deviation (%RSDs), chromatographic resolutions, retention times, and the minimum relative response factors (RRFs) for all target compounds and surrogates with exceptions of the following:

  1,4-Dioxane was lower than the required minimum RRF (0.01) and it was not detected in any associated samples. Due to the possibility of false negatives, all 1,4-dioxane results were qualified unusable, "R".

Semivolatile

- One Semivolatile ICAL was evaluated in this report. It met the technical acceptance criteria set forth by the SOW for the percent relative standard deviation (%RSD), chromatographic resolutions, retention times, and the minimum relative response factors (RRFs) for all target compounds and surrogates with exceptions of the following:

- The %RSD of 2,4-Dinitrophenol (%RSD @ 33.7) exceeded the 30% QC limit. Recalculations indicated that the instrument was not linear at the lowest standard concentration analyzed during the initial calibration. It was qualified as J/UJ.

Pesticide / PCBs

- The frequency of analysis of ICALs for pesticides and PCBs were met. All of the ICALs met the technical acceptance criteria, i.e. the percent relative standard deviation (%RSD), minimum relative response factors (RRFs), retention time windows, chromatographic resolutions, percent endrin and 4,4'-DDT breakdown (Pesticide only) for all target compounds and surrogates. None of the results was qualified on the basis of ICAL analyses.

Continuing Calibration Verification (CCV) - Acceptable

The frequency of analysis of CCV checks, chromatographic resolution, percent differences (%Ds) between the mean and daily response (calibration) factors, minimum response factors, retention time shifts and percent DDT and endrin breakdowns (pesticide analyses) were met by all target compounds and surrogates. The recoveries of the pesticide standard mixtures were within the control limits. None of the data was qualified on this basis.

Quantitation Limits - Acceptable

The sample results were adjusted for the amount extracted. All of the sample runs met the contract required quantitation limits (CRQLs). The CRQLs were based on the lowest standard concentration analyzed in the initial calibration. Target compounds that were detected at concentrations less than the CRQLs were qualified as estimated, "J". When applicable, all of the "B", "J", "P" and "E" qualifiers applied by the laboratory were crossed out by the reviewer.

Blanks - Acceptable

The frequency of analysis of blank and surrogate recovery criteria were met by all of the blanks analyzed. There were only trace amount of Chloroform detected in one of the volatile method blank; Beta, Gamma BHC & Heptachlor in pesticide blanks. Since none of the above was detected in any of the samples, none of the data was qualified on this basis.

Analytical Sequence - Acceptable

All of the standards, blanks, samples, and QC samples were analyzed in accordance with the SOW specified analytical sequence. The retention times as monitored by the internal standards (VOC, SVOC) and surrogates (VOC, SVOC, Pesticide, PCB) were within the specified RT windows. All of the sample analyses were within an acceptable 12 hour QC period and were bracketed by technically acceptable CCV check standards. None of the data was qualified on this basis.

Surrogates/Deuterated Monitoring Compound (DMC) Recoveries

Fourteen deuterated VOCs were spiked in all the samples and QCs to evaluate laboratory performance. The 14 DMCs and their corresponding recovery acceptance limits are:

"Volatile Water"

DMCs	Recovery Limits (%)	DMCs	Recovery Limits (%)
Vinyl chloride -d3 (VCL)	65-131	1,2- Dichloropropane-d6 (DPA)	79-124
Chloroethane-d5 (CLA)	71-131	Toluene-d8 (TOL)	77–121
1,1- Dichloroethene-d2 (DCE)	55-104	trans-1,3-dichloropropene-d4 (TDP)	73-121
2-Butanone-d5 (BUT)	49-155	2-Hexanone-d5 (HEX)	28-135

Chloroform-d (CLF)	78-121	1,4-Dioxane (DXE)	50-150
1,2-Dichloroethane-d4 (DCA)	78-129	1,1,2,2-Tetrachloroethane-d2 (TCA)	73 –125
Benzene-d6 (BEN)	77-124	1,2-dichlorobenzene-d4 (DCZ)	80 –131

All of the water volatile surrogate recoveries met the applicable recovery criteria and none of the data was qualified on this basis.

Surrogates or deuterated monitoring compounds (DMCs) are known concentrations of isotope-labeled acid and base/neutral or polynuclear hydrocarbon compounds added to the field and QC samples prior to extraction for SVOC analyses to monitor the laboratory's performance and efficiency and efficiency during sample processing, extraction and analysis. The following is the list of DMCs/surrogates added to all field and QC samples prior to sample extraction:

"SVOC Water"

DMCs	Recovery Limits (%)	DMCs	Recovery Limits (%)
Phenol-d5 (PHL)	39-106	Dimethylphthalate-d6 (DMP)	47-114
Bis(2-chloroethyl)ether-d8 (BCE)	40-105	Acenapthylene-d8 (ACY)	41-107
2-Chlorophenol-d4 (2CP)	41-106	4-Nitrophenol-d4 (4NP)	33-116
4-Methylphenol-d8 (4MP)	25-111	Fluorene-d10 (FLR)	42-111
Nitrobenzene-d4 (NBZ)	43-108	4,6-Dinitro-2-methylphenol-d2 (NMP)	22-104
2-Nitrophenol-d4 (2NP)	40-108	Anthracene-d10 (ANC)	44-110
2,4-Dichlorophenol-d3 (DCP)	37-105	Pyrene-d10 (PYR)	52-119
4-Chloroaniline-d4 (4CA)	1-145	Benzo(a)pyrene-d12 (BAP)	32-121

All of the water semi-volatile surrogate recoveries met the applicable recovery criteria and none of the data was qualified on this basis.

"Pesticide/PCB Water"

Pesticide/PCB Surrogate (water)	Recovery Limits (%)
Tetrachloro-m-xylene (TCX)	30-150
Decachlorobiphenyl (DCB)	30-150

The recoveries of TCX and DCB were calculated and reported from two GCs & four columns used for both pesticides and PCB analyses. The TCX and DCB recoveries were within acceptable control limits in one of the

primary or confirmatory columns on two instruments. None of the data was qualified on this basis.

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Sample JAH96 was designated for MS/MSD analyses. The frequency of analysis and percent recovery (%R) passed for each of the spiking analytes with exceptions of 2/18 spiking compounds (eg. > upper QC limit) for the semivolatiles. Because none of the spiking compounds were detected in any of the samples, none of the data was qualified by the reviewer on this basis.

Internal Standards - Acceptable

The acceptance criteria for internal standards (IS) was within +/- 30 seconds for retention time (RT) shifts and 50% to 200% of the IS area as compared to the IS RT and area of the daily continuing verification standard. All of the analyses met the IS area & RT criteria and none of the data was qualified on this basis.

Compound Identification - Acceptable

All of the detected target compounds were within the retention time windows, met the USEPA spectral matching criteria and were judged to be acceptable. None of the data was qualified on this basis.

Tentatively Identified Compounds

Chromatographic peaks in the samples with areas > 10% of the nearest Internal Standard, but were not part of the target compound list, were identified as tentatively identified compounds (TICs) at estimated concentrations, "JN"

Laboratory Contact

The laboratory was not contacted during this review.

Overall Assessment

The total number of data points evaluated was 648. As the result of the data validation, data results were qualified as follows: 0.2% of the total data points were qualified as non-detects, "U"; 0.6% of them were qualified due to calibration; 0.8% of them were qualified due to extremely low and unacceptable instrument response.

The data, as qualified, are acceptable and can be used for all purposes.

Data Qualifiers		
	U	The analyte was not detected at or above the reported result.
	J	The analyte was positively identified. The associated numerical result is an estimate.
	UJ	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
	R	The data are unusable for all purposes.
	N	There is evidence the analyte is present in this sample.
	JN	There is evidence that the analyte is present. The associated numerical result is an estimate.
	L	Low Bias
	H	High Bias
	Q	The result is estimated because the concentration is below the Contract Required Quantitation Limits (CRQLs)
	K	Unknown Bias

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAHA4

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A16

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	0.84	JQ
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	JR

11/25/08

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAHA4

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A16

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

11/25/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAHA4

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A16

Level: (TRACE or LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

11/25/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAHA5

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-005

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A17

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	0.91	JQ
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	~~5.0~~ 1.6	~~JB~~ U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	JR

11/25/08

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAHA5

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-005

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A17

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

11/25/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAHA5

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-005

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A17

Level: (TRACE or LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

11/25/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH96

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A11

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	X R

11/25/08

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH96

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A11

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
79-01-6	Trichloroethene	0.53	JQ
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

11/25/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAH96

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A11

Level: (TRACE or LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

SOM01.2 (10/2006)

11/25/08

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH97

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A14

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	1.0	J
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	R

11/25/08

Report 1,4-Dioxane for Low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH97

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A14

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

11/25/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAH97

Lab Name: Shealy Environmental Services, inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A14

Level: (TRACE or LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
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19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

11/25/08

SOM01.2 (10/2006)

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH98

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-003

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A15

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	0.86	JQ
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	ØR

11/25/08

Report 1,4-Dioxane for low-Medium VOA analysis only

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH98

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-003

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A15

Level: (TRACE/LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-pentanone	10	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

11/25/08

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAH98

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-003

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: 51027A15

Level: (TRACE or LOW/MED) LOW Date Received: 10/23/2008

% Moisture: not dec. _____ Date Analyzed: 10/27/2008

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

11/25/08

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAHA4

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-004

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111109

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
100-52-7	Benzaldehyde	5.0	U
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-Chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	5.0	U
98-86-2	Acetophenone	5.0	U
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	5.0	U
98-95-3	Nitrobenzene	5.0	U
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	5.0	U
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-Chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	5.0	U
91-20-3	Naphthalene	5.0	U
106-47-8	4-Chloroaniline	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	5.0	U
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
208-96-8	Acenaphthylene	5.0	U
99-09-2	3-Nitroaniline	10	U
83-32-9	Acenaphthene	5.0	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAHA4

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-004

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111109

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10	UJK
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	5.0	U
121-14-2	2,4-Dinitrotoluene	5.0	U
84-66-2	Diethylphthalate	5.0	U
86-73-7	Fluorene	5.0	U
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10	U
534-52-1	4,6-Dinitro-2-methylphenol	10	U
86-30-6	N-Nitrosodiphenylamine [1]	5.0	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	5.0	U
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	5.0	U
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	5.0	U
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	5.0	U
117-84-0	Di-n-octylphthalate	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	5.0	U
50-32-8	Benzo(a)pyrene	5.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
53-70-3	Dibenzo(a,h)anthracene	5.0	U
191-24-2	Benzo(g,h,i)perylene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAHA4

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-004

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111109

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
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22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2]EPA-designated Registry Number.

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH96

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111104

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
100-52-7	Benzaldehyde	5.0	U
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-Chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	5.0	U
98-86-2	Acetophenone	5.0	U
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	5.0	U
98-95-3	Nitrobenzene	5.0	U
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	5.0	U
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-Chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	5.0	U
91-20-3	Naphthalene	5.0	U
106-47-8	4-Chloroaniline	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	5.0	U
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
208-96-8	Acenaphthylene	5.0	U
99-09-2	3-Nitroaniline	10	U
83-32-9	Acenaphthene	5.0	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH96

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111104

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10	UJK
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	5.0	U
121-14-2	2,4-Dinitrotoluene	5.0	U
84-66-2	Diethylphthalate	5.0	U
86-73-7	Fluorene	5.0	U
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10	U
534-52-1	4,6-Dinitro-2-methylphenol	10	U
86-30-6	N-Nitrosodiphenylamine [1]	5.0	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	5.0	U
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	5.0	U
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	5.0	U
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	5.0	U
117-84-0	Di-n-octylphthalate	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	5.0	U
50-32-8	Benzo(a)pyrene	5.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
53-70-3	Dibenzo(a,h)anthracene	5.0	U
191-24-2	Benzo(g,h,i)perylene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAH96

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111104

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
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12					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2]EPA-designated Registry Number.

11/25/08

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH97

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-002

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111107

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
100-52-7	Benzaldehyde	5.0	U
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-Chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	5.0	U
98-86-2	Acetophenone	5.0	U
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	5.0	U
98-95-3	Nitrobenzene	5.0	U
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	5.0	U
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-Chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	5.0	U
91-20-3	Naphthalene	5.0	U
106-47-8	4-Chloroaniline	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	5.0	U
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
208-96-8	Acenaphthylene	5.0	U
99-09-2	3-Nitroaniline	10	U
83-32-9	Acenaphthene	5.0	U

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH97

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-002

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111107

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10	UJK
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	5.0	U
121-14-2	2,4-Dinitrotoluene	5.0	U
84-66-2	Diethylphthalate	5.0	U
86-73-7	Fluorene	5.0	U
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10	U
534-52-1	4,6-Dinitro-2-methylphenol	10	U
86-30-6	N-Nitrosodiphenylamine [1]	5.0	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	5.0	U
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	5.0	U
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	0.57	J
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	5.0	U
117-84-0	Di-n-octylphthalate	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	5.0	U
50-32-8	Benzo(a)pyrene	5.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
53-70-3	Dibenzo(a,h)anthracene	5.0	U
191-24-2	Benzo(g,h,i)perylene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAH97

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-002

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111107

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2]EPA-designated Registry Number.

11/25/08

1D - FORM I SV-1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH98

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-003

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111108

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
100-52-7	Benzaldehyde	5.0	U
108-95-2	Phenol	5.0	U
111-44-4	Bis(2-Chloroethyl)ether	5.0	U
95-57-8	2-Chlorophenol	5.0	U
95-48-7	2-Methylphenol	5.0	U
108-60-1	2,2'-Oxybis(1-chloropropane)	5.0	U
98-86-2	Acetophenone	5.0	U
106-44-5	4-Methylphenol	5.0	U
621-64-7	N-Nitroso-di-n-propylamine	5.0	U
67-72-1	Hexachloroethane	5.0	U
98-95-3	Nitrobenzene	5.0	U
78-59-1	Isophorone	5.0	U
88-75-5	2-Nitrophenol	5.0	U
105-67-9	2,4-Dimethylphenol	5.0	U
111-91-1	Bis(2-Chloroethoxy)methane	5.0	U
120-83-2	2,4-Dichlorophenol	5.0	U
91-20-3	Naphthalene	5.0	U
106-47-8	4-Chloroaniline	5.0	U
87-68-3	Hexachlorobutadiene	5.0	U
105-60-2	Caprolactam	5.0	U
59-50-7	4-Chloro-3-methylphenol	5.0	U
91-57-6	2-Methylnaphthalene	5.0	U
77-47-4	Hexachlorocyclopentadiene	5.0	U
88-06-2	2,4,6-Trichlorophenol	5.0	U
95-95-4	2,4,5-Trichlorophenol	5.0	U
92-52-4	1,1'-Biphenyl	5.0	U
91-58-7	2-Chloronaphthalene	5.0	U
88-74-4	2-Nitroaniline	10	U
131-11-3	Dimethylphthalate	5.0	U
606-20-2	2,6-Dinitrotoluene	5.0	U
208-96-8	Acenaphthylene	5.0	U
99-09-2	3-Nitroaniline	10	U
83-32-9	Acenaphthene	5.0	U

11/25/08

1E - FORM I SV-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH98

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-003

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111108

Level: (LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	10	UJK
100-02-7	4-Nitrophenol	10	U
132-64-9	Dibenzofuran	5.0	U
121-14-2	2,4-Dinitrotoluene	5.0	U
84-66-2	Diethylphthalate	5.0	U
86-73-7	Fluorene	5.0	U
7005-72-3	4-Chlorophenyl-phenylether	5.0	U
100-01-6	4-Nitroaniline	10	U
534-52-1	4,6-Dinitro-2-methylphenol	10	U
86-30-6	N-Nitrosodiphenylamine [1]	5.0	U
95-94-3	1,2,4,5-Tetrachlorobenzene	5.0	U
101-55-3	4-Bromophenyl-phenylether	5.0	U
118-74-1	Hexachlorobenzene	5.0	U
1912-24-9	Atrazine	5.0	U
87-86-5	Pentachlorophenol	10	U
85-01-8	Phenanthrene	5.0	U
120-12-7	Anthracene	5.0	U
86-74-8	Carbazole	5.0	U
84-74-2	Di-n-butylphthalate	5.0	U
206-44-0	Fluoranthene	5.0	U
129-00-0	Pyrene	5.0	U
85-68-7	Butylbenzylphthalate	5.0	U
91-94-1	3,3'-Dichlorobenzidine	5.0	U
56-55-3	Benzo(a)anthracene	5.0	U
218-01-9	Chrysene	5.0	U
117-81-7	Bis(2-ethylhexyl)phthalate	5.0	U
117-84-0	Di-n-octylphthalate	5.0	U
205-99-2	Benzo(b)fluoranthene	5.0	U
207-08-9	Benzo(k)fluoranthene	5.0	U
50-32-8	Benzo(a)pyrene	5.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	U
53-70-3	Dibenzo(a,h)anthracene	5.0	U
191-24-2	Benzo(g,h,i)perylene	5.0	U
58-90-2	2,3,4,6-Tetrachlorophenol	5.0	U

[1] Cannot be separated from Diphenylamine

1K - FORM I SV-TIC
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
JAH98

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-003

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 111108

Level: (TRACE or LOW/MED) LOW Extraction: (Type) CONT

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Concentrated Extract Volume: 1000 (uL) Date Extracted: 10/27/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Date Analyzed: 11/11/2008

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
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16					
17					
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19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[2]	Total Alkanes	N/A		

[2]EPA-designated Registry Number.

11/25/08

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAHA4

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-004

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 032F3201

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Extraction: (Type) CONT Date Extracted: 10/27/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 11/05/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050 ~~0.12~~	~~PB~~ U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.015	JQ
76-44-8	Heptachlor	0.050 ~~0.0082~~	~~JB~~ U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10 ~~0.0055~~	~~JP~~ U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U

11/26/08

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH96

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 029F2901

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Extraction: (Type) CONT Date Extracted: 10/27/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 11/05/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050 ~~0.14~~	~~PB~~ U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U

11/26/08

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH97

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-002

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 030F3001

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Extraction: (Type) CONT Date Extracted: 10/27/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 11/05/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050 ~~0.044~~	~~JPB~~ U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.0070	JQ
76-44-8	Heptachlor	0.050 ~~0.0072~~	~~JB~~ U
309-00-2	Aldrin	0.050 ~~0.0059~~	~~JP~~ U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U

11/26/08

1G - FORM I PEST
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH98

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-003

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 031F3101

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Extraction: (Type) CONT Date Extracted: 10/27/2008

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 11/05/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg): ug/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050 ~~0.013~~	~~JPB~~ U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050 ~~0.0069~~	~~JB~~ U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U

11/26/08

SOM01.2 (10/2006)

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAHA4

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-004

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 028F2801

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Extraction: (Type) CONT Date Extracted: 10/28/2008

Concentrated Extract Volume: 10000.0 (uL) Date Analyzed: 11/10/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
37324-23-5	Aroclor-1262	1.0	U
11100-14-4	Aroclor-1268	1.0	U

11/26/08

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH96

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-001

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 023F2301

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Extraction: (Type) CONT Date Extracted: 10/28/2008

Concentrated Extract Volume: 10000.0 (uL) Date Analyzed: 11/10/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
37324-23-5	Aroclor-1262	1.0	U
11100-14-4	Aroclor-1268	1.0	U

11/26/08

SOMO1.2 (10/2006)

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH97

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-002

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 026F2601

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Extraction: (Type) CONT Date Extracted: 10/28/2008

Concentrated Extract Volume: 10000.0 (uL) Date Analyzed: 11/10/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
37324-23-5	Aroclor-1262	1.0	U
11100-14-4	Aroclor-1268	1.0	U

11/26/08

1H - FORM I ARO
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
JAH98

Lab Name: Shealy Environmental Services, Inc. Contract: EP-W-05-031

Lab Code: SHEALY Case No.: 37953 Mod. Ref No.: _____ SDG No.: JAHA4

Matrix: (SOIL/SED/WATER) Water Lab Sample ID: JJ23019-003

Sample wt/vol: 1000 (g/mL) mL Lab File ID: 027F2701

% Moisture: _____ Decanted: (Y/N) _____ Date Received: 10/23/2008

Extraction: (Type) CONT Date Extracted: 10/26/2008

Concentrated Extract Volume: 10000.0 (uL) Date Analyzed: 11/10/2008

Injection Volume: 1.0 (uL) GPC Factor: 1.0 Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) Y

Acid Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
37324-23-5	Aroclor-1262	1.0	U
11100-14-4	Aroclor-1268	1.0	U

1/26/08

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for Total Petroleum Hydrocarbon - Diesel Range Extended Analysis Results from the USEPA Region 10 Laboratory

PROJECT NAME: Larson AFB Titan Missile Facility S-2 Area Groundwater, Warden, Grant County, WA

PROJECT CODE: TEC-897A

FROM: Gerald Dodo, Chemistry Supervisor
Office of Environmental Assessment, USEPA Region 10 Laboratory

TO: Ken Marcy, RPM
Office of Environmental Cleanup, USEPA Region 10

CC: Alexis Ande, TechLaw, Inc.
Franki Jewell, TechLaw, Inc.

I have authorized release of this data package. Attached you will find the Total Petroleum Hydrocarbon-Diesel Range Extended (TPH-Dx) results for the Larson AFB Titan Missile Facility S-2 Area Groundwater project for the samples collected 10/21/08. For further information regarding the attached data, contact Chris Pace at 360-871-8703.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM FOR ORGANIC CHEMICAL ANALYSES

Date: December 1, 2008

To: Ken Marcy, RPM
Office of Environmental Cleanup, USEPA Region 10

From: Chris Pace, Chemist
Office of Environmental Assessment, USEPA Region 10 Laboratory

Subject: Quality Assurance Review for the Total Petroleum Hydrocarbon - Diesel Range Extended Analysis of Samples from the Larson AFB Titan Missile Facility S-2 Area Groundwater

Project Code: TEC-897A
Account Code: 09T10P302DD2C10ZZLA00

CC: Alexis Ande, TechLaw, Inc.
Franki Jewell, TechLaw, Inc.

The following is a quality assurance review of the data for total petroleum hydrocarbon - diesel range extended (TPH-Dx) analysis of water samples from the above referenced site. The preparation and analyses were performed by the EPA Region 10 Laboratory ESAT contractor using modified EPA SW846 method 3535 and Washington State Department of Ecology Method NWTPH-Dx.

This review was conducted for the following samples:

08434000	08434001	08434002	08434007

1. Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). No excursions were required from the method Standard Operating Procedure.

All measures of quality control met Laboratory/QAPP criteria.

For those tests for which the EPA Region 10 Laboratory has been accredited by the National Environmental Laboratory Accreditation Conference (NELAC), all requirements of the current NELAC Standard have been met.

2. Sample Transport and Receipt

Upon sample receipt, no conditions were noted that would impact data quality.

3. Sample Holding Times

The concentration of an analyte in a sample or extract of a sample may increase or decrease over time depending on the nature of the analyte. The holding time maximum criteria applied for the extraction of water samples is 7 days from the time of collection. Extracts have a holding time maximum of 40 days from the time of preparation. All samples were extracted and analyzed within these criteria.

4. Sample Preparation

Samples were prepared according to the method.

5. Initial Calibration/Continuing Calibration Verification (CCV)

Initial calibration was performed on 11/04/08 for #2 diesel and motor oil. Percent relative standard deviations (RSDs) of the calibration factors met the criteria of ≤20% or the correlation coefficients met the criteria of ≥0.99.

The CCV for effluent samples met the criteria for frequency of analysis and relative retention time (RRT) windows. The percent accuracies met the criteria of 85-115%.

6. LCS/LCSD

Data for laboratory control sample/laboratory control sample duplicates (LCS/LCSD) are generated to provide information on the accuracy and precision of the analytical method and the laboratory performance. The LCS/LCSD recoveries were within the criteria of 50-150% with a relative percent difference (RPD) of ≤50.

7. Blank Analysis

Method blanks were prepared and analyzed with each sample extraction batch to evaluate the potential for laboratory contamination and effects on the sample results. Target analytes were not detected in the blanks.

8. Surrogate Spikes

Surrogate recoveries are used to help in the evaluation of laboratory performance on individual samples. The surrogate recoveries met the criteria of 50-150%.

9. Duplicate Sample Analysis

Duplicate sample analyses are performed to provide information on the precision, in the matrix of interest, of the analytical method. A duplicate analysis was performed using sample 08434000. All results which were above 5 times the reporting limit met the relative percent difference (RPD) criteria of ≤20.

10. Compound Identification/Quantitation

The initial calibration functions were used for calculations. Reported quantitation limits were based on the initial calibration standards and sample size used for the analysis.

TPH-Dx was not detected in any of the samples.

11. Data Qualifiers

All requirements for data qualifiers from the preceding sections were accumulated. Each sample data summary sheet and each compound was checked for positive or negative results. From this, the overall need for data qualifiers for each analysis was determined. In cases where more than one of the preceding sections required data qualifiers, the most restrictive qualifier has been added to the data.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data quality objectives. Should questions arise regarding the data, contact Chris Pace at the Region 10 Laboratory, phone number (360) 871 - 8703.

Qualifier	Definition
U	The analyte was not detected at or above the reported value.
J	The identification of the analyte is acceptable; the reported value is an estimate.
UJ	The analyte was not detected at or above the reported value. The reported value is an estimate.
R	The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable. No value is reported with this qualification.
NA	Not Applicable, the parameter was not analyzed for, or there is no analytical result for this parameter. No value is reported with this qualification.

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434000	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-01			

			Result	Units	Qlfr
GC					
Parameter	: Tot Petroleum Hyd, Diesel extended				Container ID : N14
Method	: NWTPH-DX	Diesel range organics			Analysis Date : 11/5/2008
Prep Method	: 3535A	Solid Phase Extraction			Prep Date : 10/27/2008
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	0.21	mg/L	U
	*400010	TPH-GC/Motor Oil Range Organic s	0.52	mg/L	U
Surrogate(s :	629992	Pentacosane	115	%Rec	

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	08434000
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Duplicate
Station Description:			

GC

Parameter : Tot Petroleum Hyd, Diesel extended — Container ID : N15
Method : NWTPH-DX Diesel range organics — Analysis Date : 11/5/2008
Prep Method : 3535A Solid Phase Extraction — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	0.21	mg/L	U
	*400010	TPH-GC/Motor Oil Range Organic s	0.52	mg/L	U
Surrogate(s :	629992	Pentacosane	114	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**13:30:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434001	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-02			

GC

Parameter : Tot Petroleum Hyd, Diesel extended — Container ID : N5
Method : NWTPH-DX Diesel range organics — Analysis Date : 11/5/2008
Prep Method : 3535A Solid Phase Extraction — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	0.19	mg/L	U
	*400010	TPH-GC/Motor Oil Range Organic s	0.46	mg/L	U
Surrogate(s :	629992	Pentacosane	119	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**15:00:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434002	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-03			

GC

Parameter : Tot Petroleum Hyd, Diesel extended — Container ID : N5
Method : NWTPH-DX Diesel range organics — Analysis Date : 11/5/2008
Prep Method : 3535A Solid Phase Extraction — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	0.19	mg/L	U
	*400010	TPH-GC/Motor Oil Range Organic s	0.46	mg/L	U
Surrogate(s :	629992	Pentacosane	126	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434007	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-04			

GC

Parameter : Tot Petroleum Hyd, Diesel extended — Container ID : N5
Method : NWTPH-DX Diesel range organics — Analysis Date : 11/5/2008
Prep Method : 3535A Solid Phase Extraction — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	0.21	mg/L	U
	*400010	TPH-GC/Motor Oil Range Organic s	0.52	mg/L	U
Surrogate(s :	629992	Pentacosane	124	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	LCS8301A
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	LCS
Station Description:			

GC

Parameter : Tot Petroleum Hyd, Diesel extended — Container ID :
Method : NWTPH-DX Diesel range organics — Analysis Date : 11/5/2008
Prep Method : 3535A Solid Phase Extraction — Prep Date : 10/27/2008

			Result	Units	Qlfr
Surrogate(s :	629992	Pentacosane	119	%Rec	
	*400009	TPH-GC/Diesel Range Organics	89	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	LCS8301B
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	LCSD
Station Description:			

GC

Parameter : Tot Petroleum Hyd, Diesel extended — Container ID :
Method : NWTPH-DX Diesel range organics — Analysis Date : 11/5/2008
Prep Method : 3535A Solid Phase Extraction — Prep Date : 10/27/2008

			Result	Units	Qlfr
Surrogate(s :	629992	Pentacosane	124	%Rec	
	*400009	TPH-GC/Diesel Range Organics	91	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8301A1
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Blank
Station Description:			

GC

Parameter : Tot Petroleum Hyd, Diesel extended — Container ID :
Method : NWTPH-DX Diesel range organics — Analysis Date : 11/5/2008
Prep Method : 3535A Solid Phase Extraction — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	0.20	mg/L	U
	*400010	TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s :	629992	Pentacosane	104	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8301A2
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Tot Petroleum Hyd, Diesel extended				Container ID :
Method	: NWTPH-DX	Diesel range organics			Analysis Date : 11/5/2008
Prep Method	: 3535A	Solid Phase Extraction			Prep Date : 10/27/2008
Analytes(s):	*400009	TPH-GC/Diesel Range Organics	0.20	mg/L	U
	*400010	TPH-GC/Motor Oil Range Organic s	0.50	mg/L	U
Surrogate(s :	629992	Pentacosane	110	%Rec	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for 1, 4-Dioxane Analysis Results from the USEPA Region 10 Laboratory

PROJECT NAME: Larson AFB Titan Missile Facility S-2 Area Groundwater, Warden, Grant County, WA

PROJECT CODE: TEC-897A

FROM: Gerald Dodo, Chemistry Supervisor
Office of Environmental Assessment, USEPA Region 10 Laboratory

TO: Ken Marcy, RPM
Office of Environmental Cleanup, USEPA Region 10

CC: Alexis Ande, TechLaw, Inc.
Franki Jewell, TechLaw, Inc.

I have authorized release of this data package. Attached you will find the 1, 4-Dioxane results for the Larson AFB Titan Missile Facility S-2 Area Groundwater project for the samples collected 10/21/08. For further information regarding the attached data, contact Peggy Knight at 360-871-8713.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM FOR ORGANIC CHEMICAL ANALYSES

Date: December 2, 2008

To: Ken Marcy, SAM
Office of Environmental Cleanup, USEPA Region 10

From: Peggy Knight, Chemist
Office of Environmental Assessment, USEPA Region 10 Laboratory

Subject: Quality Assurance Review for 1, 4-Dioxane Analysis of Samples from the Larson AFB Titan Missile Facility S-2 Area Groundwater, Warden, Grant County, WA

Project Code: TEC-897A
Account Code: 09T10P302DD2C10ZZLA00

CC: Alexis Ande, TechLaw, Inc.
Franki Jewell, TechLaw, Inc.

The following is a quality assurance review of the data for 1, 4-dioxane analysis of water samples from the above site. The preparation and analyses were performed by EPA Region 10 Laboratory chemists using modified EPA method 522.

This review was conducted for the following samples:

08434000 08434001 08434002 08434007		

1. Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs), Work Instructions and the Quality Assurance Project Plan (QAPP). The analysis was performed using a Manchester Laboratory developed procedure involving solid phase extraction using a carbon sorbent, and GC/MS determinative procedure modified from EPA 522 to accommodate isotope dilution using D_8-1, 4-dioxane as the internal standard/surrogate.

The Region 10 Laboratory's Quality System has been accredited to the standards of the National Environmental Laboratory Accreditation Conference (NELAC).

2. Sample Transport and Receipt

The temperature recorded on sample receipt was 8°C. Samples for this analysis are allowed to be up to 10°C on receipt. No conditions were noted that would impact data quality for 1, 4-dioxane for this project.

3. Sample Holding Times

The concentration of an analyte in a sample or extract of a sample may increase or decrease over time depending on the nature of the analyte. For this reason, holding time limits are recommended for samples and extracts. All samples in this project were preserved as described in Method 522, were extracted within seven days of collection and were analyzed within 28 days of extraction.

4. Sample Preparation

Samples were prepared using a Manchester protocol modified as described above from EPA 522.

5. Initial Calibration and Calibration Verification

The calibration functions generated for the initial calibration met general SOP criteria. The Minimum Reporting Level (MRL) is the lowest point for which the calculated value tests within laboratory specified criteria. A second source check of the calibration curve was within 20% of the expected value. All calibration verification checks for the target analyte met the frequency and recovery criteria on the day of analysis.

6. Laboratory Control Samples (LCS)

Data for laboratory control samples are generated to provide information on the accuracy of the analytical method and laboratory performance. The LCS/LCSD met recovery (70-130%) and precision (30%) criteria.

7. Blank Analysis

The analyte 1, 4-dioxane was not detected in method blanks above the reporting limit.

8. Surrogate /Internal standard

This procedure employs adding the fully deuterated analog of 1, 4-dioxane which serves both as a surrogate (recovery monitor) and an internal standard. Recovery of D_8-1, 4-dioxane is monitored by comparison of its area to the area of the recovery standard D_8-tetrahydrofuran which is added after extraction. Recoveries were 50-150% for all reported data.

9. Matrix Spike/Matrix Spike Duplicate Analysis

Matrix spike analyses were performed and reported for sample 08434000 which was spiked at the reporting limit. Dioxane results were within 20% of the expected value and the RPD was <20%.

10. Compound Quantitation

All results for analytes that are not detected are assigned the value of the MRL and the ‘U’ qualifier is attached.

All manual integrations have been reviewed and found to comply with acceptable integration practices.

11. Identification

Identification was based on RRT and presence of the quantitation and confirming *m/z* abundance ratios. The RRTs for all detected target compounds were within acceptable limits of the initial or continuing calibration standards. The *m/z* abundance ratios were judged acceptable.

12. Data Qualifiers

The "U" qualifier was attached to the results. No other qualification was required. The definition for the data qualifier is as follows:

Qualifier	Definition
U	The analyte was not detected at or above the reported value.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data quality objectives. Should questions arise regarding the data, contact Peggy Knight at the Region 10 Laboratory, phone number (360) 871- 8713.

13. Definitions

Accuracy - the degree of conformity of a measured or calculated quantity to its actual value.

Duplicate Analysis – when a duplicate of a sample (DS), a matrix spike (MSD), or a laboratory control sample (LCSD) is analyzed, it is possible to use the comparison of the results in terms of relative percent difference (RPD) to calculate precision.

Internal standards – Compounds used to help evaluate instrument analytical performance for individual samples. Internal standards provide an instrument response for reference to accurately quantify the analytes for all associated instrumental analyses.

Laboratory Control Sample (LCS) – a clean matrix spiked with known quantities of analytes. The LCS is processed with samples through every step of preparation and analysis at a frequency no less than one for every 20 project samples. Measuring percent recovery of each analyte in the LCS provides a measurement of accuracy for the analyte.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Sample analyses performed to provide information about the effect of sample matrix on analyte recovery and measurement in project samples. To create the MS/MSD, a sample is spiked with known quantities of analyte and the percent recovery of the analyte is determined.

Method Blank – An analytical control that is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background and reagent contamination. A method blank is prepared and analyzed for every batch of samples at a minimum frequency

of one per every 20 samples. To produce unqualified data, the result of the method blank analysis is required to be less than the MRL and less than 5 times the amount of analyte found in any project sample.

Minimum Reporting Level (MRL) – The smallest measured concentration of a substance that can be reliably measured using a given analytical method.

Peak Integrations – The output of many analytical instruments is a peak which represents the quantity of analyte. The instrument automatically integrates the peak area to provide the concentration of the analyte; however, sometimes these peaks need to be manually integrated by the analyst.

Precision – the degree of mutual agreement or repeatability among a series of individual results.

Relative Percent Difference – The difference between two sample results divided by their mean and expressed as a percentage.

Surrogate Spikes – Added compounds, usually labeled isotope versions of analytes of concern or compounds not typically found in the environment. They are used to help evaluate laboratory preparation and analysis performance for individual samples. The surrogate spike differs from the LCS (above) in that it is placed in each project sample to assess preparation and analytical efficiency.

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434000	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-01			

			Result	Units	Qlfr
GCMS					
Parameter	: Semi-volatiles				Container ID : W1
Method	: 8270C-MOD	Semivolatiles by GCMS			Analysis Date : 11/12/2008
Prep Method	: 521-M	(MOD) Nitrosamines in Drinking Water by Solid Phase Ext			Prep Date : 10/27/2008
Analytes(s):	123911	1,4-Dioxane	1.0	ug/L	U
Surrogate(s :	17647744	1,4-Dioxane-D8	58	%Rec	

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434000	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Matrix Spike	
Station Description:				

GCMS

Parameter : Semi-volatiles — Container ID : W2
Method : 8270C-MOD Semivolatiles by GCMS — Analysis Date : 11/12/2008
Prep Method : 521-M (MOD) Nitrosamines in Drinking Water by Solid Phase Ext — Prep Date : 10/27/2008

			Result	Units	Qlfr
Surrogate(s) :	123911	1,4-Dioxane	110	%Rec	
	17647744	1,4-Dioxane-D8	58	%Rec	

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434000	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Matrix Spike Dupl	
Station Description:				

			Result	Units	Qlfr

GCMS

Parameter : Semi-volatiles — Container ID : W3
Method : 8270C-MOD Semivolatiles by GCMS — Analysis Date : 11/12/2008
Prep Method : 521-M (MOD) Nitrosamines in Drinking Water by Solid Phase Ext — Prep Date : 10/27/2008

Surrogate(s :	123911	1,4-Dioxane	106	%Rec	
	17647744	1,4-Dioxane-D8	63	%Rec	

Project Code:	TEC-897A	**Collected:**	10/21/08	**13:30:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434001	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-02			

GCMS

Parameter : Semi-volatiles — Container ID : W1
Method : 8270C-MOD Semivolatiles by GCMS — Analysis Date : 11/12/2008
Prep Method : 521-M (MOD) Nitrosamines in Drinking Water by Solid Phase Ext — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	123911	1,4-Dioxane	1.0	ug/L	U
Surrogate(s :	17647744	1,4-Dioxane-D8	59	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**15:00:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434002	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-03			

GCMS

Parameter : Semi-volatiles — Container ID : W1
Method : 8270C-MOD Semivolatiles by GCMS — Analysis Date : 11/12/2008
Prep Method : 521-M (MOD) Nitrosamines in Drinking Water by Solid Phase Ext — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	123911	1,4-Dioxane	1.0	ug/L	U
Surrogate(s :	17647744	1,4-Dioxane-D8	57	%Rec	

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434007	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-04			

GCMS

Parameter	: Semi-volatiles			Container ID :	W1
Method	: 8270C-MOD	Semivolatiles by GCMS		Analysis Date :	11/12/2008
Prep Method	: 521-M	(MOD) Nitrosamines in Drinking Water by Solid Phase Ext		Prep Date :	10/27/2008

		Result	**Units**	**Qlfr**
Analytes(s): 123911	1,4-Dioxane	1.0	ug/L	U
Surrogate(s : 17647744	1,4-Dioxane-D8	61	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8301B1
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Semi-volatiles — Container ID : 0

Method : 8270C-MOD Semivolatiles by GCMS — Analysis Date : 11/12/2008

Prep Method : 521-M (MOD) Nitrosamines in Drinking Water by Solid Phase Ext — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	123911	1,4-Dioxane	1.0	ug/L	U
Surrogate(s :	17647744	1,4-Dioxane-D8	72	%Rec	

Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8301B2
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Semi-volatiles — Container ID : 0

Method : 8270C-MOD Semivolatiles by GCMS — Analysis Date : 11/13/2008

Prep Method : 521-M (MOD) Nitrosamines in Drinking Water by Solid Phase Ext — Prep Date : 10/27/2008

			Result	Units	Qlfr
Analytes(s):	123911	1,4-Dioxane	1.0	ug/L	U
Surrogate(s :	17647744	1,4-Dioxane-D8	71	%Rec	

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8301F1
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	LCS
Station Description:			

		Result	Units	Qlfr

GCMS

Parameter : Semi-volatiles — Container ID : 0
Method : 8270C-MOD Semivolatiles by GCMS — Analysis Date : 11/12/2008
Prep Method : 521-M (MOD) Nitrosamines in Drinking Water by Solid Phase Ext — Prep Date : 10/27/2008

Surrogate(s :	123911	1,4-Dioxane	109	%Rec
	17647744	1,4-Dioxane-D8	70	%Rec

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8301F2
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	LCSD
Station Description:			

		Result	Units	Qlfr

GCMS

Parameter : Semi-volatiles — Container ID : 0
Method : 8270C-MOD Semivolatiles by GCMS — Analysis Date : 11/12/2008
Prep Method : 521-M (MOD) Nitrosamines in Drinking Water by Solid Phase Ext — Prep Date : 10/27/2008

Surrogate(s :	123911	1,4-Dioxane	110	%Rec
	17647744	1,4-Dioxane-D8	61	%Rec

OBW8301F2 LCSD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for N-Nitrosodimethylamine (NDMA) Analysis Results from the USEPA Region 10 Laboratory

PROJECT NAME: Larson AFB Titan Missile Facility S-2

PROJECT CODE: TEC-897A

FROM: Gerald Dodo, Chemistry Supervisor
Office of Environmental Assessment, USEPA Region 10 Laboratory

TO: Ken Marcy, RPM
Office of Environmental Cleanup, USEPA Region 10

CC: Alexis Ande, TechLaw, Inc.
Franki Jewell, TechLaw, Inc.

I have authorized release of this data package. Attached you will find the N-Nitrosodimethylamine results for the water samples from Larson AFB Titan Missile Facility S-2 Area Groundwater project for the samples collected 10/21/08. For further information regarding the attached data, contact Steve Reimer at 360-871-8718.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM FOR ORGANIC CHEMICAL ANALYSES

Date: December 2, 2008

To: Ken Marcy, SAM
Office of Environmental Cleanup, USEPA Region 10

From: Steven Reimer, Chemist
Office of Environmental Assessment, USEPA Region 10 Laboratory

Subject: Quality Assurance Review for NDMA Analysis of Samples from the Larson AFB Titan Missile Facility S-2

Project Code: TEC-897A
Account Code: 09T10P302DD2C10ZZLA00

CC: Alexis Ande, TechLaw, Inc.
Franki Jewell, TechLaw, Inc.

The following is a quality assurance review of the data for N-nitrosodimethylamine (NDMA) analysis of water samples from the above referenced site. The analyses were performed by EPA Region 10 Laboratory personnel using modified EPA method 521.

This review was conducted for the following samples:

08434000 08434001 08434002 08434007

1. Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). Excursions from the method are documented in the Project Notes and included changes to the calibration levels, limiting the target analyte to NDMA and the injecting only 2µL.

The quality control measures which did not meet Laboratory/QAPP criteria are annotated in the title of each affected subsection with *"Laboratory/QAPP Criteria Not Met"*.

For those tests for which the EPA Region 10 Laboratory has been accredited by the National Environmental Laboratory Accreditation Conference (NELAC), all requirements of the current NELAC Standard have been met.

2. Sample Transport and Receipt

Upon sample receipt, samples were received at slightly elevated temperature, 8ºC. This is less than the method required <10ºC for sample shipment.

3. Sample Holding Times

The concentration of an analyte in a sample or extract of a sample may increase or decrease over time depending on the nature of the analyte. The samples were extracted within the 14 day holding time for water samples and analyzed within the 28 day holding time for extracts.

4. Sample Preparation

Samples were prepared according to the method.

5. Initial Calibration and Continuing Calibration Verification (CCV)

Initial calibration was performed on 11/17/08 for the target and surrogate compounds. Quadratic fits for both target and surrogate met the method criteria of ≤30% residual (<50% for the lowest point).

The CCVs met the criteria for frequency of analysis and relative retention time (RRT) windows for target and surrogate compounds. The percent accuracies were 70-130% (% difference of ±30) of the true values for levels above the lowest standard.

6. LCS/LCSD

Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSD) are generated to provide information on the accuracy and precision of the analytical method and the laboratory performance. The LCS/LCSD recoveries were within the criteria of 70-130% with a relative percent difference (RPD) of ≤30%.

7. Blank Analysis

Method blanks were analyzed with each sample batch to evaluate the potential for laboratory contamination and effects on the sample results. Target analytes detected in samples were reported without qualification if the results were five times that of the blank. Detected sample results were qualified 'U' if the results were below these criteria. The sample concentration or the sample quantification limit, whichever is greater, was reported as the qualified result.

8. Surrogate Spikes

Surrogate recoveries are used to help in the evaluation of laboratory performance on individual samples. The surrogate recoveries met the criteria of 70-130%.

9. Matrix Spike/Matrix Spike Duplicate Analysis (MS/MSD)

MS/MSD analyses are performed to provide information on the effects of sample matrices toward the analytical method. An MS/MSD analysis was performed using sample 08434000 (S1/S2). The recoveries met the criteria of 30-130%.

10. Internal Standard Performance

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. The retention time of the internal standard was within the window set during the initial calibration. The percent areas of all the internal standards were within the specified $\pm$50% of the average area in the initial calibration and within 30% of the continuing calibration standard for all reported results.

11. Compound Quantitation

The initial calibration functions were used for calculations. Reported quantitation limits were based on the initial calibration standards and sample size used for the analysis. Detected analyte concentrations below the sample quantitation limits were qualified >J=.

All manual integrations have been reviewed and found to comply with acceptable integration practices.

12. Identification

All of the compounds detected in the analyses were within the RRT windows and were judged to be acceptable.

13. Data Qualifiers

All requirements for data qualifiers from the preceding sections were accumulated. Each sample data summary sheet and each compound was checked for positive or negative results. From this, the overall need for data qualifiers for each analysis was determined. In cases where more than one of the preceding sections required data qualifiers, the most restrictive qualifier has been added to the data.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data quality objectives. Should questions arise regarding the data, contact Steve Reimer at the Region 10 Laboratory, phone number (360) 871 - 8718.

Qualifier/ Remark Code	Definition (Codes Assigned to Values)
U	The analyte was not detected at or above the reported value.

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434000	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-01			

			Result	Units	Qlfr
GCMS					
Parameter	: Misc. GCMS				Container ID : N2
Method	: 521	Determination of Nitrosamines in Water			Analysis Date : 11/17/2008
Prep Method	: 521	Determination of Nitrosamines in Water			Prep Date :
Analytes(s):	62759	N-Nitrosodimethylamine	0.005	ug/L	U
Surrogate(s :	17829059	N-Nitroso-dimethylamine-d6	96	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434000	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Matrix Spike	
Station Description:				

			Result	Units	Qlfr

GCMS

Parameter : Misc. GCMS — Container ID : N1
Method : 521 Determination of Nitrosamines in Water — Analysis Date : 11/17/2008
Prep Method : 521 Determination of Nitrosamines in Water — Prep Date :

Surrogate(s :	62759	N-Nitrosodimethylamine	93	%Rec	
	17829059	N-Nitroso-dimethylamine-d6	95	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434000	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Matrix Spike Dupl	
Station Description:				

		Result	Units	Qlfr

GCMS

Parameter : Misc. GCMS — Container ID : N5
Method : 521 Determination of Nitrosamines in Water — Analysis Date : 11/17/2008
Prep Method : 521 Determination of Nitrosamines in Water — Prep Date :

Surrogate(s :	62759	N-Nitrosodimethylamine	102	%Rec	
	17829059	N-Nitroso-dimethylamine-d6	100	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	08434000
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Matrix Spike #3
Station Description:			

		Result	Units	Qlfr

GCMS

Parameter : Misc. GCMS — Container ID : N2
Method : 521 Determination of Nitrosamines in Water — Analysis Date : 11/17/2008
Prep Method : 521 Determination of Nitrosamines in Water — Prep Date :

Surrogate(s :	62759	N-Nitrosodimethylamine	89	%Rec	
	17829059	N-Nitroso-dimethylamine-d6	94	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**13:30:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434001	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-02			

			Result	Units	Qlfr
GCMS					
Parameter	: Misc. GCMS				Container ID : N2
Method	: 521	Determination of Nitrosamines in Water			Analysis Date : 11/17/2008
Prep Method	: 521	Determination of Nitrosamines in Water			Prep Date :
Analytes(s):	62759	N-Nitrosodimethylamine	0.005	ug/L	U
Surrogate(s :	17829059	N-Nitroso-dimethylamine-d6	82	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**15:00:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434002	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-03			

			Result	Units	Qlfr
GCMS					
Parameter	: Misc. GCMS				Container ID : N2
Method	: 521	Determination of Nitrosamines in Water			Analysis Date : 11/17/2008
Prep Method	: 521	Determination of Nitrosamines in Water			Prep Date :
Analytes(s):	62759	N-Nitrosodimethylamine	0.005	ug/L	U
Surrogate(s :	17829059	N-Nitroso-dimethylamine-d6	97	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	10/21/08	**12:20:00**
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid	
Project Officer:	KEN MARCY	**Sample Number:**	08434007	
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Reg sample	
Station Description:	S2-GW-04			

			Result	Units	Qlfr
GCMS					
Parameter	: Misc. GCMS				Container ID : N2
Method	: 521	Determination of Nitrosamines in Water			Analysis Date : 11/18/2008
Prep Method	: 521	Determination of Nitrosamines in Water			Prep Date :
Analytes(s):	62759	N-Nitrosodimethylamine	0.005	ug/L	U
Surrogate(s :	17829059	N-Nitroso-dimethylamine-d6	99	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8302B2
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GCMS					
Parameter	: Misc. GCMS				Container ID : N1
Method	: 521	Determination of Nitrosamines in Water			Analysis Date : 11/17/2008
Prep Method	: 521	Determination of Nitrosamines in Water			Prep Date :
Analytes(s):	62759	N-Nitrosodimethylamine	0.005	ug/L	U
Surrogate(s :	17829059	N-Nitroso-dimethylamine-d6	98	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8302F1
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	LCS
Station Description:			

		Result	Units	Qlfr

GCMS

Parameter : Misc. GCMS — Container ID : N1

Method : 521 Determination of Nitrosamines in Water — Analysis Date : 11/17/2008

Prep Method : 521 Determination of Nitrosamines in Water — Prep Date :

Surrogate(s :	62759	N-Nitrosodimethylamine	97	%Rec	
	17829059	N-Nitroso-dimethylamine-d6	94	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-897A

Project Code:	TEC-897A	**Collected:**	
Project Name:	LARSON AFB TITAN MISSILE S-2	**Matrix:**	Liquid
Project Officer:	KEN MARCY	**Sample Number:**	OBW8302F2
Account Code:	09T10P302DD2C10ZZLA00	**Type:**	LCSD
Station Description:			

			Result	Units	Qlfr

GCMS

Parameter : Misc. GCMS — Container ID : N1
Method : 521 Determination of Nitrosamines in Water — Analysis Date : 11/17/2008
Prep Method : 521 Determination of Nitrosamines in Water — Prep Date :

Surrogate(s :	62759	N-Nitrosodimethylamine	97	%Rec
	17829059	N-Nitroso-dimethylamine-d6	98	%Rec

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101

December 9, 2008

Reply To
Attn. Of: **OEA-095**

MEMORANDUM

SUBJECT: Data Validation for Larson AFB S-2 Site Inspection, Case# 37953, SDG: MJAH96, Inorganic Analysis

FROM: Donald Matheny, Chemist
Environmental Services Unit, OEA

TO: Ken Marcy, Site Assessment Manager
Office of Environmental Cleanup (ECL-112)

CC: Alexis Ande, Techlaw Inc.

The data validation of inorganic analyses for the above sample set is complete. Four (4) water samples were analyzed for total elements by DataChem Laboratories, Salt Lake City, UT. Sample numbers for this delivery group are as follows:

MJAH96 MJAH97 MJAH98 MJAHA4

DATA QUALIFICATIONS

The following comments refer to the lab's performance in meeting the specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM05.4", the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" and the judgment of the reviewer. The comments presented herein are based on the information provided for the review.

TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all elements (180 days, Hg 28 days). Samples were collected on 10/21/08. ICP-AES analysis was conducted on 11/7/08 and 11/11/08. Mercury analysis was conducted on 11/6/08.

INSTRUMENT CALIBRATION/VERIFICTION - Acceptable

For ICP-AES, instrument calibration was performed in accordance with method requirements. Recoveries for instrument verification standards (93-106%) met the frequency (10%) and recovery (90-110%) criteria.

For mercury, a blank and five standards were digested for instrument calibration. The correlation coefficient (1.000) met the linearity criterion ($\geq$ 0.995). Percent recoveries for verification standards (101-106%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all elements.

INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the required frequency and recoveries met the criteria (80-120% or $\pm$ 2xCRQL) for all elements.

LABORATORY CONTROL SAMPLES (LCS) - Acceptable

An aqueous LCS was digested and analyzed. Recoveries (91-108%) were within the criterion (80-120%) for water samples.

BLANKS

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Blanks were not detected within a concentration factor (5X) of samples with the exception of antimony, chromium, iron, manganese and lead. Affected samples were qualified (U).

MATRIX SPIKE ANALYSIS - Acceptable

A matrix spike was analyzed for sample MJAH96. Percent recoveries (92-109%) met the criterion (75-125%) for all elements.

DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample was analyzed for sample MJAH96. Relative percent differences (2%) met the control limits ($\pm$ 20% or $\pm$ CRQL) for aqueous samples.

SERIAL DILUTION - Acceptable

A five-fold serial dilution was analyzed for sample MJAH96. Percent differences ($\leq$ 1%) met the acceptance criteria ($\leq$ 10%) for all applicable elements.

ASSESSMENT SUMMARY

The following is a summary of qualified data:

Antimony, chromium, iron, manganese and lead data were qualified (U) due to the detected presence of these elements in the instrument verification and/or preparation blanks.

DATA QUALIFIERS

U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

J - The associated value is an estimated quantity.

R - The data are unusable. The analyte may or may not be present in the sample.

UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA Sample No.
MJAH96

Lab Name: DATACHEM LABORATORIES Contract: EPW06054

Lab Code: DATAC Case No.: 37953 NRAS No.: _____ SDG No.: MJAH96

Matrix: (soil/water) WATER Lab Sample ID: 8297035001

Level: (low/med) LOW Date Received: 10/23/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	222.	U		P
7440-36-0	Antimony	66.7	U		P
7440-38-2	Arsenic	11.1	U		P
7440-39-3	Barium	12.7	J		P
7440-41-7	Beryllium	5.6	U		P
7440-43-9	Cadmium	5.6	U		P
7440-70-2	Calcium	21300			P
7440-47-3	Chromium	1.0	~~J~~	U	P
7440-48-4	Cobalt	55.6	U		P
7440-50-8	Copper	27.8	U		P
7439-89-6	Iron	111.	U		P
7439-92-1	Lead	1.2	~~J~~	U	P
7439-95-4	Magnesium	8710			P
7439-96-5	Manganese	16.7	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	44.4	U		P
7440-09-7	Potassium	7560			P
7782-49-2	Selenium	3.6	J		P
7440-22-4	Silver	0.74	J		P
7440-23-5	Sodium	32300			P
7440-28-0	Thallium	27.8	U		P
7440-62-2	Vanadium	24.3	J		P
7440-66-6	Zinc	4.8	J		P
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

DM
12-9-08

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA Sample No.
MJAH97

Lab Name: DATACHEM LABORATORIES Contract: EPW06054

Lab Code: DATAC Case No.: 37953 NRAS No.: _____ SDG No.: MJAH96

Matrix: (soil/water) WATER Lab Sample ID: 8297035004

Level: (low/med) LOW Date Received: 10/23/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	222.	U		P
7440-36-0	Antimony	6.1	J	U	P
7440-38-2	Arsenic	2.6	J		P
7440-39-3	Barium	16.0	J		P
7440-41-7	Beryllium	5.6	U		P
7440-43-9	Cadmium	5.6	U		P
7440-70-2	Calcium	71100			P
7440-47-3	Chromium	1.9	J	U	P
7440-48-4	Cobalt	55.6	U		P
7440-50-8	Copper	27.8	U		P
7439-89-6	Iron	111.	U		P
7439-92-1	Lead	11.1	U		P
7439-95-4	Magnesium	86300			P
7439-96-5	Manganese	16.7	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.5	J		P
7440-09-7	Potassium	4920	J		P
7782-49-2	Selenium	3.6	J		P
7440-22-4	Silver	4.2	J		P
7440-23-5	Sodium	84300			P
7440-28-0	Thallium	27.8	U		P
7440-62-2	Vanadium	43.6	J		P
7440-66-6	Zinc	238.			P
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

DM 12-9-08

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA Sample No.
MJAH98

Lab Name: DATACHEM LABORATORIES Contract: EPW06054

Lab Code: DATAC Case No.: 37953 NRAS No.: _____ SDG No.: MJAH96

Matrix: (soil/water) WATER Lab Sample ID: 8297035005

Level: (low/med) LOW Date Received: 10/23/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	222.	U		P
7440-36-0	Antimony	3.1	J	U	P
7440-38-2	Arsenic	11.1	U		P
7440-39-3	Barium	32.9	J		P
7440-41-7	Beryllium	5.6	U		P
7440-43-9	Cadmium	5.6	U		P
7440-70-2	Calcium	18600			P
7440-47-3	Chromium	4.3	J		P
7440-48-4	Cobalt	55.6	U		P
7440-50-8	Copper	27.8	U		P
7439-89-6	Iron	23.8	J	U	P
7439-92-1	Lead	11.1	U		P
7439-95-4	Magnesium	4430	J		P
7439-96-5	Manganese	2.2	J	U	P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2.1	J		P
7440-09-7	Potassium	746.	J		P
7782-49-2	Selenium	38.9	U		P
7440-22-4	Silver	11.1	U		P
7440-23-5	Sodium	2210	J		P
7440-28-0	Thallium	27.8	U		P
7440-62-2	Vanadium	55.6	U		P
7440-66-6	Zinc	66.7	U		P
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

DM 12-9-08

USEPA - CLP

1A-IN
INORGANIC ANALYSIS DATA SHEET

EPA Sample No.
MJAHA4

Lab Name: DATACHEM LABORATORIES Contract: EPW06054

Lab Code: DATAC Case No.: 37953 NRAS No.: _____ SDG No.: MJAH96

Matrix: (soil/water) WATER Lab Sample ID: 8297035006

Level: (low/med) LOW Date Received: 10/23/2008

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	222.	U		P
7440-36-0	Antimony	5.1	~~J~~	U	P
7440-38-2	Arsenic	3.0	J		P
7440-39-3	Barium	15.9	J		P
7440-41-7	Beryllium	5.6	U		P
7440-43-9	Cadmium	5.6	U		P
7440-70-2	Calcium	71000			P
7440-47-3	Chromium	1.7	~~J~~	U	P
7440-48-4	Cobalt	55.6	U		P
7440-50-8	Copper	27.8	U		P
7439-89-6	Iron	14.9	~~J~~	U	P
7439-92-1	Lead	2.2	~~J~~	U	P
7439-95-4	Magnesium	85700			P
7439-96-5	Manganese	16.7	U		P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	3.2	J		P
7440-09-7	Potassium	4910	J		P
7782-49-2	Selenium	38.9	U		P
7440-22-4	Silver	3.4	J		P
7440-23-5	Sodium	83100			P
7440-28-0	Thallium	27.8	U		P
7440-62-2	Vanadium	43.5	J		P
7440-66-6	Zinc	230.			P
57-12-5	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

DM 12-9-08

USEPA - CLP

9-IN

METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: DATACHEM LABORATORIES Contract: EPW06054

Lab Code: DATAC Case No.: 37953 NRAS No.: _____ SDG No.: MJAH96

Instrument Type: CV Instrument ID: AACV01 Date: 01/10/2008

Preparation Method: CW1

Concentration Units (ug/L or mg/kg): ug/L

Analyte	Wavelength /Mass	CRQL	MDL
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Mercury	253.70	0.2	0.016
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Thallium			
Vanadium			
Zinc			
Cyanide			

Comments:

USEPA - CLP

9-IN
METHOD DETECTION LIMITS (ANNUALLY)

Lab Name: DATACHEM LABORATORIES Contract: EPW06054

Lab Code: DATAC Case No.: 37953 NRAS No.: _____ SDG No.: MJAH96

Instrument Type: P Instrument ID: ICP07 Date: 01/09/2008

Preparation Method: MW1

Concentration Units (ug/L or mg/kg): ug/L

Analyte	Wavelength /Mass	CRQL	MDL
Aluminum	308.22	200	25.7
Antimony	206.83	60	1.8
Arsenic	189.04	10	1.5
Barium	455.40	200	0.34
Beryllium	313.11	5.0	0.14
Cadmium	214.44	5.0	0.12
Calcium	317.93	5000	23.3
Chromium	205.55	10	0.37
Cobalt	228.62	50	0.44
Copper	324.75	25	2.9
Iron	259.94	100	3.3
Lead	220.35	10	1.2
Magnesium	279.08	5000	23.7
Manganese	257.61	15	0.57
Mercury			
Nickel	231.60	40	0.89
Potassium	766.49	5000	40.8
Selenium	196.09	35	2.4
Silver	328.07	10	0.48
Sodium	589.59	5000	13.0
Thallium	190.86	25	0.81
Vanadium	292.40	50	0.81
Zinc	206.20	60	2.3
Cyanide			

Comments:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

SUBJECT: Data Release for Perchlorate results from the USEPA Region 10 Laboratory

PROJECT NAME: Larson AFB Titan Missile Facility S-2

PROJECT CODE: TEC-897A

FROM: Gerald Dodo, Chemistry Supervisor
Office of Environmental Assessment
USEPA Region 10 Laboratory

TO: Ken Marcy, RPM
Office of Environmental Cleanup, Assessment and Brownfields Unit 1, USEPA Region 10

CC: Alexis Ande, Techlaw, Inc.
Franki Jewell, Techlaw, Inc.

I have authorized release of this data package. Attached you will find the Perchlorate results for the Larson AFB Titan Missile Facility S-2 project for the samples collected on 10/21/2008. This is the last of the data associated with this project. For further information regarding the attached data, contact Katie Adams at 360-871-8715.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

QUALITY ASSURANCE MEMORANDUM FOR INORGANIC CHEMICAL ANALYSES

DATE: December 11, 2008

TO: Ken Marcy, Project Manager
Office of Environmental Cleanup, Assessment and Brownfields Unit 1, US EPA Region 10

FROM: Stephanie Le, Chemist
Office of Environmental Assessment, US EPA Region 10 Laboratory

SUBJECT: Quality Assurance Review of the Larson AFB Titan Missile Facility S-2 Project
For Perchlorate by Method 6860

Project Code: TEC-897A
Account Code: 09T10P302DD2C10ZZLA00

CC: Alexis Ande, Techlaw, Inc.
Franki Jewell, Techlaw, Inc.

The following is a quality assurance review of the results of the analysis of four water samples for perchlorate. The samples were submitted for the Larson AFB Titan Missile Facility S-2 project. The analyses were performed by ESAT chemists at the US EPA Region 10 Laboratory in Port Orchard, WA, following US EPA and Laboratory guidelines.

This review was conducted for the following samples:

08434015 08434016 08434017 08434018

Data Qualifications

Comments below refer to the quality control specifications outlined in the Laboratory's current Quality Assurance Manual, Standard Operating Procedures (SOPs) and the Quality Assurance Project Plan (QAPP). No excursions were required from the method.

The quality control measures which did not meet Laboratory/QAPP criteria are annotated in the title of each affected subsection with **"Laboratory/QAPP Criteria Not Met"**. The Region 10 Laboratory's Quality System has been accredited to the standards of the National Environmental Laboratory Accreditation Conference (NELAC).

1. Sample Transport and Receipt - Laboratory/QAPP Criteria Not Met

Refer to the Corrective Action Notice dated 10/26/2008 for a record of clerical observations made during sample receipt.

2. Sample Holding Times

The concentration of an analyte in a sample or sample extract may increase or decrease over time depending on the nature of the analyte. For this reason, holding time limits are recommended for samples (and extracts of samples). The samples covered by this review met method holding time recommendations.

3. Sample Preparation

Samples were prepared according to EPA Method 6860 for perchlorate in these matrices. No qualification of the data was required based on sample preparation.

4. Initial Calibration and Calibration Verification

The linear regression generated for the initial calibration met method criteria. The low point of the calibration curve is the Minimum Reporting Level (MRL) of the method. All calibration verification checks met the frequency and recovery criteria on the day of analysis. No qualification was required based on calibration or calibration verification.

5. Laboratory Control Samples

All laboratory control sample results met the recovery acceptance criteria for the method. No qualification was required based on laboratory control sample analysis.

6. Blank Analysis

The method blanks did not contain detectable levels of analyte which would require data qualification.

7. Internal Standards

All internal standards met instrument response criteria.

8. Duplicate Analysis

Duplicate analysis was performed on sample 08434015. Sample results which were greater than five times the MRL level were within the method RPD requirements (≤50% near the MRL or ≤15% for concentrations near or above the mid range). No qualification was required based on duplicate analysis.

9. Matrix Spike/Matrix Spike Duplicate Analysis

Matrix spike analyses were performed on sample 08434015. Sample results were within the method required recovery requirements (80-120% for water samples or 70-130% for solid samples). No qualification was required based on matrix spike analyses.

10. Analyte Quantitation

Quantitation is performed using *m/z* 99 and internal standard calibration. All results for analytes that are not detected are assigned the value of the MRL and the 'U' qualifier is attached. No manual integrations were performed.

11. Identification

Perchlorate identification was confirmed by comparisons to the internal standard peak, and by natural abundance ratios, as described in the method. These method requirements were within acceptable limits for detected perchlorate in all samples and standards.

12. Instrument Peak Integrations

All manual integrations have been reviewed and found to comply with acceptable integration practices.

13. Reporting Limits

All sample results that fall below the MRL are assigned the value of the MRL and the 'U' qualifier is attached.

14. Data Qualifiers

No data qualification was required for this analysis.

The definition for the data qualifier is as follows:

U - The analyte was not detected at or above the reported value.

The usefulness of qualified data should be treated according to the severity of the qualifier in light of the project's data quality objectives. Should questions arise regarding the data, contact Stephanie Le at the Region 10 Laboratory, phone number (360) 871- 8715.

15. Definitions

Accuracy - the degree of conformity of a measured or calculated quantity to its actual value.

Duplicate Analysis – when a duplicate of a sample (DS), a matrix spike (MSD), or a laboratory control sample (LCSD) is analyzed, it is possible to use the comparison of the results in terms of relative percent difference (RPD) to calculate precision.

Internal standards - Compounds used to help evaluate instrument analytical performance for individual samples. Internal standards provide an instrument response for reference to accurately quantify the analytes for all associated instrumental analyses.

Laboratory Control Sample (LCS) - a clean matrix spiked with known quantities of analytes. The LCS is processed with samples through every step of preparation and analysis. Measuring percent recovery of each analyte in the LCS provides a measurement of accuracy for the analyte in the project samples. A laboratory control sample is prepared and analyzed at a frequency no less than one for every 20 project samples.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - Sample analyses performed to provide information about the effect of the sample matrix on analyte recovery and measurement within the project samples. To create the MS/MSD, a project sample is spiked with known quantities of analyte and the percent recovery of the analyte is determined.

Method Blank- An analytical control that is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background and reagent contamination. A method blank is prepared and analyzed for every batch of samples at a minimum frequency of one per every 20 samples. To produce unqualified data, the result of the method blank analysis is required to be less than the MRL and less than 10 times the amount of analyte found in any project sample.

Minimum Reporting Level (MRL) - the smallest measured concentration of a substance that can be reliably measured using a given analytical method.

Precision – the degree of mutual agreement or repeatability among a series of individual results.

Relative Percent Difference – The difference between two sample results divided by their mean and expressed as a percentage.